THE OIL AND GAS JOURNAL

Volume 32
Number 24

November 2, 1933

Subscription rates: 1 year, $6 (Canada and foreign, $7); 6 months, $3; 3 months, $2; current copies, 15 cents (extra copies of special numbers, 50 cents)

SPECIAL ARTICLES

Crude Oil Production Must Be Curtailed Materially at Once or Federal Administrator Will Act ---- 7
By ANDREW M. ROWLEY

Improved Demand for Crude Stimulates Reconditioning of Wells ---- 8
By L. G. E. BIGNELL

Producers Optimistic as Price Schedules Take Many Out of the Red; Institute Proceedings ---- 9
By ANDREW M. ROWLEY

Price Fixing Hearings Delayed; May Postpone Schedule 9
By CHARLES E. KERN

Automotive and Refinery Engineers Join to Study Satisfying Customer ---- 10
By C. O. WILLSON

Use of Solvents in Oil Refining ---- 10
By C. O. WILLSON

Combination Cracking Unit May Perform Wide Duties 11
By GEORGE ARMISTEAD, JR.

Engineers Test Skill Against Wild Well ---- 12
By NEIL WILLIAMS

Gas Air Repressuring in East Solves Sand Problem Which Banned Flooding ---- 13
By R. C. CONINE

New East Texas Order Cuts Allowable to 878,216 Bbls. 13

Use of Propane During Dewaxing and Treating of Lubricating Oil ---- 14
By ULRIC B. BRAY, CLAUDE E. SWIFT and DONALD E. CARR

Application of Data on Hydrocarbon Mixtures to Typical Problem ---- 18
By W. K. LEWIS

Think It Over (Editorial) ---- 24

Osage Sale ---- 32

Standardized Octane Value, Balanced Fuel Volatility Important ---- 57
By J. B. MACAULEY, JR.

Field Problems From Readers ---- 63
Edited by THOMAS F. SMILEY

Adjustment of Soil Corrosion Pit Depth Measurements ---- 69
By GORDON N. SCOTT

Texas Gross Production ---- 72-78

FIELD OPERATIONS

Late Fields ---- 32

East Texas ---- 33
By L. E. BREDBERG

West and North Texas ---- 38
By L. E. BREDBERG

Kansas ---- 44
By JAMES McINTYRE

Oklahoma ---- 45
By JAMES McINTYRE

Gulf Coast ---- 47
By W. A. SPINNEY

North Louisiana-Arkansas, Mississippi ---- 48

California ---- 49
By L. P. STOCKMAN

Southwest Texas ---- 51
By B. D. STEVENSON

Michigan ---- 52
By PAUL ELLIOTT

Central West ---- 52
By GEORGE A. WHITNEY

Eastern Fields ---- 53
By STAFF CORRESPONDENT

Rocky Mountain Area ---- 54
By TOLBERT R. INGRAM

Canada ---- 54
By VICTOR LAURISTON

REFINING AND MARKETING

Sluggish Mid-Continent Market Is Attributed to Incredulity Regarding Price Fixing Order ---- 26
By W. T. ZIEGENHAIN

New York Market ---- 27
By C. O. WILLSON

A.P.I. Refinery Report ---- 27

Refinery and Crude Prices ---- 28-29

Tank Wagon Markets ---- 30

Chicago Market ---- 31
By SPECIAL CORRESPONDENT

News for Petroleum Refiners ---- 34

Natural Gasoline Manufacture ---- 36

Technical Questions Answered ---- 65
By C. K. FRANCIS, Ph. D.

GENERAL DEPARTMENTS

Natural Gas Developments ---- 64

Personal Paragraphs ---- 66-67

Do You Remember? ---- 66

New and Improved Equipment ---- 68

Bureau of Mines Report ---- 70-71

Classified Advertising ---- 79

Index to Advertisers ---- 80

Refinery Section Starts on Page 26

Branch Editorial Offices

CHATHAM, ONT.	CHICAGO, Ill.	DENVER, COLO.	FT. WORTH, TEX.	HOUSTON, TEX.	LOS ANGELES	OIL CITY, PA.
Victor Lauriston	Robert C. Conine	Tolbert R. Ingram	L. E. Bredberg	Neil Williams	L. P. Stockman	Leon H. Walter
35 Stanley Ave.	6 N. Michigan Ave.	State Office Bldg.	Petroleum Bldg.	Sec. Nat. Bank Bldg.	Union Oil Bldg.	Oil City Derrick

MUSKEGON, MICH.	SAN ANTONIO, TEX.	TOLEDO, OHIO	SHREVEPORT, LA.	NEW YORK	WASHINGTON, D. C.
Paul A. Elliott	B. D. Stevenson	George A. Whitney	540 Ricou Brewster Bldg.	C. O. Willson	Charles E. Kern
Chronicle Bldg.	802 Milam Bldg.	Box 98, Main P. O.		415 Lexington Ave.	2632 Woodley Place, N. W.

Branch Advertising Offices

NEW YORK	CLEVELAND, OHIO	CHICAGO	LOS ANGELES	HOUSTON, TEX.
C. L. Cain	Howard Markt	C. R. Farmer	J. H. Tinkham	Neil Williams
415 Lexington Ave.	802 Leader Bldg.	6 N. Michigan Ave., Rm. 1416	2941 Raymond Ave.	1116 Sec. Nat Bank Bldg.

Copyright, 1933, by The Petroleum Publishing Co.

It's a Natural!

STA-VOL-ENE

A "NATURAL GASOLINE" of high octane number, stabilized to any desired vapor pressure, available for cargo shipment from our own terminals at Goodhope, La. and Houston, Texas, also by tank car from our Mid-Continent plants.

STA-VOL-ENE
STABILITY ◆ VOLATILITY ◆ ENERGY
IT'S A "NATURAL"

Hanlon-Buchanan, inc

EXPORT TERMINALS:
Goodhope, La.
Houston, Tex.

TULSA, OKLAHOMA
EXCHANGE BANK BUILDING
Cable Address . . . STAVOLENE, Tulsa, U. S. A.

PHONE 4-1101 or L. D. 398
WIRE — OR WRITE P. O. BOX 1559

Crude Production Must Be Curtailed Materially at Once or Federal Administrator Will Act

By ANDREW M. ROWLEY

DETERMINATION of the Federal oil administrator to hold crude oil production to consumer demand and belief upon the part of producers that the government will exercise its powers to achieve this object is the strongest factor in the situation at this time. While there has been a weakening in the refined oil market due to uncertainty over making effective the prices fixed by the Oil Administrator and to excessive runs to stills which have resulted in a piling up of gasoline stocks at a time when consumption is declining, the crude oil price structure remains firm.

A material reduction in production of states which have exceeded their quotas must be made immediately or interstate shipments from these states will be curtailed drastically by the Federal government. Overproduction of the past month must be taken out of current allowables. Secretary Ickes certainly means business and operators might just as well adjust their plans at once to the new quotas and make up their minds to go along with the Oil Administrator. If they don't they surely will feel the effect of the power now in the hands of the Administrator.

Efficient operation of producing properties under the present price schedule is permitting many operators to get out of the red. Every effort should be made at this time to maintain a firm price level and to pave the way for further improvement. While it will take a long time to make up the large losses of the past few years producers certainly are entitled to a price which will allow them a reasonable profit and also permit them to put their properties into better condition and gradually wipe out the losses they have suffered.

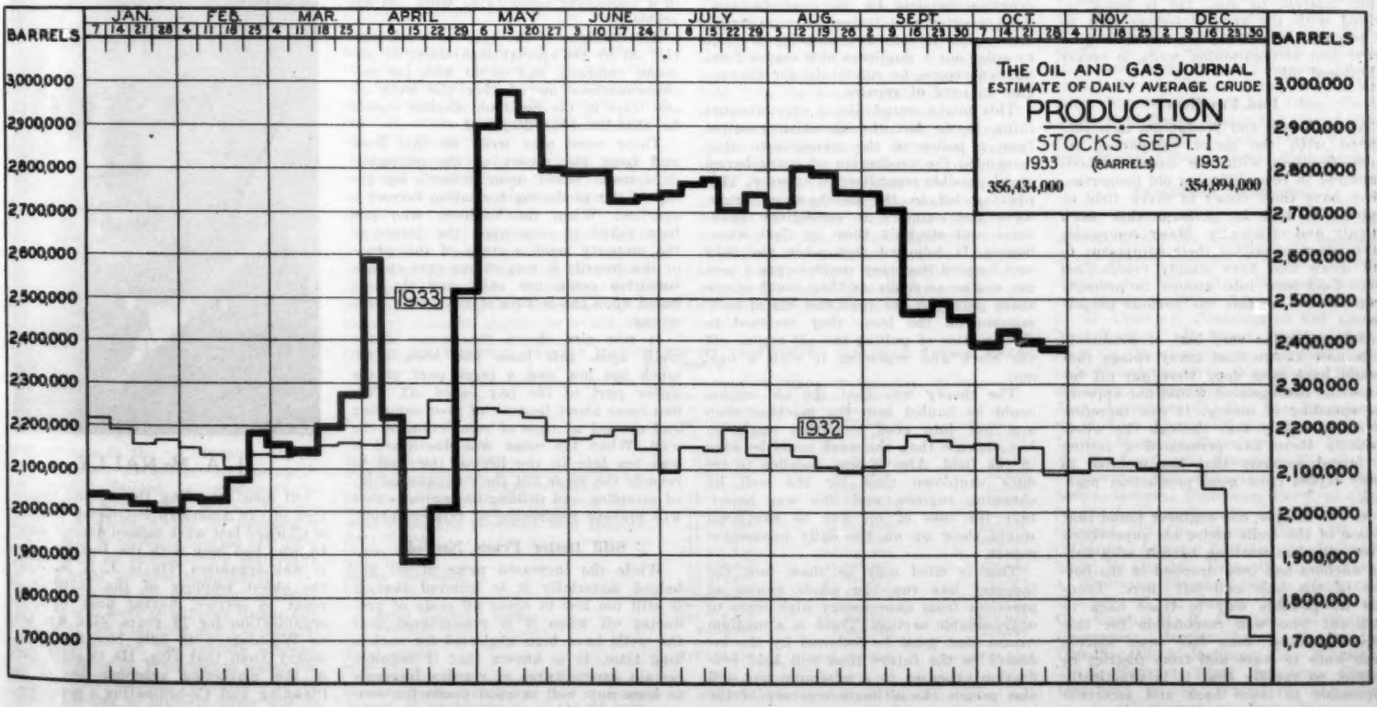
Refiners have not been co-operating as they should. They have not curtailed runs to stills even though they know consumption is declining and will be at a minimum until Spring. Burdensome stocks of gasoline will wreck plans for a stabilized refined oil market and those who had hoped to profit from better prices tentatively scheduled to go into effect December 1st may find they have defeated their own best interests if the effective date of the better prices is delayed until production of gasoline is more in line with consumer demand. Now is certainly the time for nothing less than whole-hearted, sincere co-operation in efforts to stabilize the oil business.

Crude Oil Production in the United States

Estimated daily average production for the week ending October 28, and a comparison with previous week and one year ago, follows:

	Oct. 28	Oct. 21	Oct. 29, 1932
Oklahoma—			
Oklahoma City	171,210	211,520	75,840
Seminole-St. Louis	91,315	96,555	114,720
Remainder of State	208,790	211,745	204,905
Total Oklahoma	471,315	519,820	395,465
East Texas—			
Lathrop	205,782	193,757	131,854
Kilgore	149,571	140,830	101,410
Joiner	133,441	125,643	108,549
Total East Texas	488,794	460,230	341,813
West Texas	122,045	126,147	148,905
North Central Texas	76,677	79,836	72,212
Texas Panhandle	45,212	47,072	44,095
East Central Texas	44,405	45,305	49,361
Gulf Coast—Texas	185,913	186,985	121,987
Southwest Texas	47,883	49,385	57,736
Total State of Texas	1,010,929	994,960	836,109
Kansas	111,840	114,290	96,130
North Louisiana	26,240	25,970	29,285
Gulf Coast—Louisiana	48,213	48,037	34,744
Arkansas	32,840	32,940	34,015
Eastern Fields	129,000	129,300	120,000
Rocky Mountain area	80,360	80,700	74,490
California—			
Santa Fe Springs	45,600	46,500	66,000
Long Beach	55,100	59,300	67,000
Playa Del Rey	9,900	9,700	13,500
Elwood	15,200	14,000	14,000
Kettleman Hills	60,200	60,000	59,000
Remainder of State	288,500	277,500	252,750
Total California	474,500	467,000	472,250
Total United States	2,385,237	2,413,017	2,002,488

Decrease 27,780 Bbls. Daily



Improved Demand for Crude Oil and Its Products Stimulating Work of Reconditioning Wells

By L. G. E. BIGNELL
Petroleum Engineering Editor

For several years during the period of overproduction of oil and its sale at low prices there has been a tendency upon the part of many oil producers to curtail operation expenses in every possible manner. The executives or well owners have constantly kept in front of them balance sheets of income and expenditures and have been relentless in their refusal to spend a dime more than absolutely necessary for operating expenses. As a result this same general feeling of economy has permeated the whole organization right down to the roustabout in the field.

By such procedures it has been possible to keep the company's finances in a state that permitted continued operation, but generally at a loss or at best about breaking even. The general results have been that old, and many comparatively new, properties have been allowed to run down to such an extent that it is a mystery how they can still produce any oil with the available equipment.

Reports from every section of the country indicate that every barrel of oil offered for sale is finding a ready market. Even though prices have been advanced oil has been purchased as offered. Buyers of crude oil have noted this general tendency to secure oil wherever offered and have remarked upon this very general buying as something unusual in recent years.

No one thing seems to be the cause of this desire to buy crude oil, but the producer with oil to offer is finding a ready market and that is the thing of principal interest to him. He is being instilled with the general feeling that he is justified in putting his leases in good order and reconditioning wells to secure additional oil.

Bad Practices

All engineers and production men connected with the major companies are quite familiar with the usual methods employed in reconditioning old properties. They have their crews in every field or district trained to perform this work quickly and efficiently. Many companies have never permitted their equipment to run down and have simply reorganized their field men into groups to properly keep up and operate the various properties.

But under the very best of conditions it is now known that many things that should have been done were put off because the management would not approve the spending of money. It can therefore be stated safely that through the whole industry there has permeated a feeling of forced economy that has resulted in many lapses from good production practice.

As an example, one engineer found that in one of the wells under his supervision three complete working barrels with tubing anchors had been dropped in the bottom of the hole and left there. There was no possible way to trace back to find out who was responsible for this neglect because men had been shifted from lease to lease and from district to district so rapidly that it is practically impossible to trace back and ascertain who had charge of the well when the barrels worked loose from the end of the tubing.

While this practice on the part of the pumper is unpardonable there are circumstances that mitigate the offense. The man in charge of the well knew that he should never have permitted the well to get into such a condition that the working barrel and anchor would unscrew. But he was working shorthanded and even though he knew the well should be pulled and the rods and tubing inspected he could not get authority to do so from the district superintendent or foreman.

The man in charge of the district knew that many things were being done that were not in accordance with the best practice but when he talked with the general superintendent he was cautioned to hold down expenses to a minimum because the management was not inclined to approve any expenditures not absolutely necessary. This cycle of "getting-by" therefore originated at the top of the organization and penetrated to the very humblest worker on the lease. When a working barrel worked loose it was, under such conditions, much easier to get another and pull the tubing and screw it on and put the well back on the pump as quickly as possible than to make proper repairs.

The executive was watching the daily run tickets. He could easily detect the failure of a lease to produce its quota of oil. It therefore was up to the lease man to keep his wells running regardless of the future troubles that might result from bad production practices.

Not Exceptional

This is just one instance of how properties have been operated and it may be an exception. But the general practice of holding down expenses has unquestionably been common to all fields. The oil industry had the reputation of being very generous spenders. In "the good old days" it is reported that instead of repairing a gas engine it was not unusual practice to order out a duplicate new engine from the warehouse to substitute for the engine in need of repairs.

This might sound like a very unusual thing to do but the situation resulted from a policy of the management that demanded the production of every barrel of oil possible regardless of expense. This practice led to the purchase of equipment and supplies in prodigious quantities and stocking them in field warehouses. It followed that when the field men learned that they could secure a new gas engine as easily as they could secure spare parts for one that was out of commission on the lease they resorted to the practice of pulling the old engine off the block and replacing it with a new one.

The theory was that the old engine could be hauled into the machine shop and put into good condition again at less expense than the work could be done in the field. Also it was possible to reduce shutdown time for the well by changing engines, and this was important for loss of oil due to shutdown would show up on the daily production report.

This is cited only to show how the industry has run the whole gamut of practices from unnecessary high costs to unreasonable savings. There is a medium course that must be followed by the industry in the future that will hold production expenses to a minimum but will also permit the ultimate recovery of the oil to be attained all with a reasonable amount of profit.

Reconditioning Methods

There has been an unusual lot of interest displayed in the treatment of wells with hydrochloric acid since the combined efforts of Dowell Incorporated and Pure Oil Co. were so successful in the Michigan fields about 18 months ago. It is known that hydrochloric acid had been used for similar purposes many years ago but the practice had been dormant until the success of the work in Michigan again directed the attention of the industry to it. Then everybody wanted to try it and hundreds of wells have been treated with varying degrees of success.

The lime wells are most susceptible to the acid treatment but it has been found of some advantage even in so-called "sand wells" for it seems that there may be lime formations above, below or in the sand stratum that can be attacked and this opens up drainage channels for additional oil and gas to escape to the bore hole.

Sand wells have been cleaned with light strings of cable tools, with patent bailers and sand pumps, and by other methods. Repairing casing, removing foreign material from the hole, plugging off bottom water, setting liners, raising or lowering tubing and numerous other things have been done to improve production rates and lower production costs.

Many of the larger companies have special departments in charge of men experienced in geology and petroleum engineering who make detailed studies of wells and leases and make reports to the management upon future methods to be followed. This system of checking properties has undoubtedly proven profitable or it would not be continued. While the small operator may not be able to maintain a staff of engineers for similar purposes he can employ men who can act in a consulting capacity to work out his problems.

An example of the type of work carried on by the special department in one major company had to do with the recommendations on whether the wells on one lease in the Seminole district should be abandoned or deepened.

There were nine wells on this lease and from the report of the geological department based upon driller's log the top of the producing formation formed a syncline. When the engineer who had been asked to pass upon the future of the property made a study of this phase of the records it was shown that such a condition could not exist and the logs based upon the reports of the driller were wrong.

It was also shown that some of the wells upon this lease had been cased much too low and a large part of the upper part of the pay cased off. This had come about because of poor sampling and control at time of completion of the well. When the error was discovered it was too late in the life of the well to remedy the error but the company adopted sampling and drilling-in practices that will prevent recurrence of this condition.

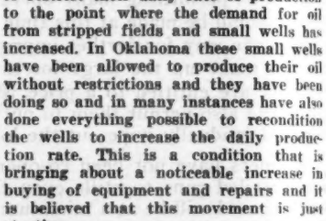
Still Better Prices Needed

While the increased price of oil has helped materially it is believed that it is still too low to cover all costs of producing oil when it is remembered that the wells have been neglected for such a long time. It is known that it requires certain expenditures at regular intervals to keep any well in good producing condition. While some oil may be secured without making necessary repairs the accumulative result of such neglect will become apparent and then the operator must pay extra for again putting the well back into proper condition for pumping.

With demand for crude oil steady and with prices averaging about $1 there is bound to be a lot of new work started. In fact much of this work has already been started and the volume is constantly increasing. New material is being purchased in increasing volume and it has been stated that there are no idle field men in the central Oklahoma districts at this time. The NRA movement has provided places for the men formerly on part time or entirely idle and these men are now back at work and this fact alone will increase the demand for equipment. Men cannot work without tools and supplies.

The main point is that there is a good demand for fresh crude oil from the well. Large fields have been so regulated as to restrict their daily rate of production to the point where the demand for oil from stripped fields and small wells has increased. In Oklahoma these small wells have been allowed to produce their oil without restrictions and they have been doing so and in many instances have also done everything possible to recondition the wells to increase the daily production rate. This is a condition that is bringing about a noticeable increase in buying of equipment and repairs and it is believed that this movement is just starting.

McNally Leaves Institute to Help at Washington



J. A. McNALLY

Oil men attending the annual convention of the American Petroleum Institute in Chicago last week missed one old standby who had been with the Institute since it was organized. He is J. A. McNally, the oldest employe of the Institute in point of service, having been with the organization for 14 years. Mac was sent to Washington to help run the oil industry from that city. He is chief clerk of the marketing subcommittee of the Planning and Co-ordinating Committee.

Producers Optimistic as Price Schedules Take Many Out of the Red; Institute Proceedings

By ANDREW M. ROWLEY

Three features of the fourteenth annual convention of the American Petroleum Institute, held last week at the Stevens Hotel, Chicago, particularly impressed the big gathering of oil men—first the general spirit of optimism which prevaded all meetings and little get-togethers; second, the belief engendered by the address of Harold L. Ickes, oil administrator, that the Federal Government means business and will use its every resource to bring crude oil production down to consumer demand; and, third, the better spirit of co-operation evident with a resultant lessening of differences and an almost entire lack of "politics" which played a prominent part in several former meetings of the Institute.

The accounting departments of oil companies are beginning to use black ink for the first time in several years. Producers, particularly, are in a far better frame of mind and are studying their individual properties with a view of reconditioning and increasing production. Little or no money has been spent for reconditioning for three years and every producer realizes the increased yield of crude oil assured by putting his property in better shape will more than pay for the cost of equipment necessary. Companies are preparing to spend a lot of money in the very near future on old properties which have been sadly neglected during the depression. They have ample evidence of what can be done in the way of increasing production by installing new equipment and they intend to take advantage of the better prices for crude oil which now prevail.

Can Maintain Crude Prices

Little or no feeling was evident at Chicago that crude oil prices cannot be held at present or higher levels. Oil men are confident Secretary Ickes has a good grasp of the situation and that the oil administrator realizes thoroughly production must be held to consumer demand if a reasonable price level is to be maintained. They also feel absolutely sure now that Mr. Ickes means what he says when he states he will use every power at his command to hold production to quotas allocated. Mr. Ickes made quite a hit with the oil men at Chicago. His address probably was the leading feature of the convention.

The refining situation is somewhat clouded by excessive runs to stills and the resultant piling up of gasoline stocks during the period when consumption is declining. The oil administrator is conversant with this situation and the industry might just as well realize now as later this condition will not be permitted to continue. If runs to stills are not reduced to a reasonable level the industry will be forced to adjust its business through Federal regulations. Sound business judgment should dictate a material reduction in gasoline manufacture at this period of the year but there are still too many persons in the oil industry hoping to obtain some advantage over competitors through failure to co-operate in movements which would benefit the industry as a whole. Crude oil production must be held to quotas allocated and runs to stills must be reduced very materially and both must be done immediately.

Despite the fact the petroleum industry expects it will have to support financially the work of the Planning and Co-ordinating Committee and the various subcommittees working in Washington under the code, there was nothing in evidence at the Chicago meeting to indicate there will be any lessening whatever in the activities of the Institute. It was felt generally the Institute is probably needed more now than ever and that it is the vehicle through which the industry can make itself heard and felt in Washington. In addition the extensive work of the Institute's different committees and organizations is especially important at this time.

At a meeting of the Planning and Co-ordinating Committee in Chicago Russell Brown, General Counsel of the Independent Petroleum Association of America, was elected assistant to the chairman of the committee, Wirt Franklin. Mr. Brown has been serving as temporary secretary of the committee and will continue to act in that capacity until a permanent secretary is selected.

Increase Directorate

The board of directors of the Institute increased the number of members of the board from 77 to 83.

All directors-at-large, elected annually by the board, were re-elected. In addition, the board accepted the recommendation of the board of councillors and added six additional members. They are:

E. L. Smith, E. L. Smith Oil Co., Mexia, Tex.; Paul G. Blazer, Ashland Refining Co., Ashland, Ky.; Ralph T. Zook, Pennsylvania Grade Crude Oil Association, Bradford, Pa.; W. S. S. Rodgers, Texas Co., New York City; A. Jacobson, Amerada Petroleum Corp., New York City, and B. L. Majewski, Deep Rock Oil Corp., Chicago.

The board decided that the executive vice president of the Institute, should be a member of the board hereafter. This position now is held by W. R. Boyd, Jr.

The board elected the following vice presidents of the Institute:

Vice president-at-large, K. R. Kingsbury, Standard Oil Co. of California, San Francisco, Calif.; vice president for production, Charles F. Roeser, Roeser & Pendleton, Fort Worth, Tex.; vice president for refining, Howard Bennette, Western Petroleum Refiners Association, Tulsa, and vice president for marketing, C. E. Arnott, Socony-Vacuum Corp., New York.

H. L. Pratt, of Socony-Vacuum Corp., New York, was re-elected treasurer of the Institute. W. R. Boyd, Jr., of New York, was re-elected executive vice president, and Lacey Walker, of New York, was re-elected secretary and assistant treasurer of the Institute.

The board, by resolution, decided that hereafter members of the executive committee may be represented at meetings by proxy. The following executive committee was elected for 1934:

Messrs. Kingsbury, Roeser, Arnott, Bennette, and Pratt, President Axtell J. Byles; Past President C. B. Ames; W. C. Teagle, Standard Oil Co. (New Jersey); H. F. Sinclair, Consolidated Oil Corp.; F. A. Leovy, Gulf Oil Corp.; E. G. Seubert, Standard Oil Co. (Indiana); J. Howard Pew, Sun Oil Co.; and J. C. Van Eck, Shell Union Oil Corp.

The following membership committee was appointed for 1934: O. D. Donnell, Ohio Oil Co., Findlay, Ohio; R. A. Broomfield, Barnsdall Oil Co. of California, Los Angeles, Calif.; Wirt Franklin, Wirt Franklin Petroleum Corp., Oklahoma City, Okla.; E. B. Reeser, The Barnsdall Corp., Tulsa; and D. E. Buchanan, Hanlon-Buchanan, Inc., Tulsa.

The board of directors of the Institute re-elected the members of the American petroleum industries committee, which represents the Institute in the fields of taxation and legislation, to serve for 1934. The committee was created at Houston, Tex., in 1932 and members have served one year. They are: Harry T. Klein, Texas Co., New York; E. S. Hall, Standard Oil Co. of New Jersey, New York; W. J. Guthrie, Gulf Refining Co., Pittsburgh; R. T. Osborn, Sinclair Refining Co., New York; James Cosgrove, Continental Oil Co., Ponca City; W. A. McAfee, Standard Oil Co. of Ohio, Cleveland; Paul Gregg, Union Oil Co. of California, Los Angeles, and George V. Holton, Socony-Vacuum Corp., New York.

Production Committee

The division of production of the Institute elected the following 20 members of the general committee, division of production, for 1934: D. S. Bushnell, Northern Group of Pipe Lines, New York; C. E. Crawley, Consolidated Oil Corp., New York; C. P. Dimit, Phillips Petroleum Co., Bartlesville; A. Jacobsen, Amerada Petroleum Corp., New York; Blaine Johnston, Simms Oil Co., Dallas; L. D. Jure, Associated Oil Co., San Francisco; C. H. Lieb, Carter Oil Co., Tulsa; D. A. Little, Magnolia Petroleum Co., Dallas; M. E. Lombardi, Standard Oil Co. of California, San Francisco; W. L. McLaine, General Petroleum Corp. of California, Los Angeles; E. J. Nicklos, Continental Oil Co., Ponca City; W. M. O'Connor, Atlantic Refining Co., Philadelphia; R. Ogarrio, Texas Co., New York; A. W. Peake, Standard Oil Co. (Indiana), Chicago; E. H. Salrin, Tide Water Oil Co., Tulsa; H. R. Straight, the Empire Companies, Bartlesville; J. R. Suman, Humble Oil & Refining Co., Houston; T. E. Swigart, Shell Petroleum Corp., Houston; W. K. Whiteford, Barnsdall

(Continued on Page 32)

Hearings on Price Fixing Are Delayed; May Not Be Effective December 1

By CHARLES E. KERN
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Oct. 30.—Hearings on price fixing will not begin for a week or 10 days. At the office of Solicitor N. R. Margold it was stated today machinery for the hearing has been set up but needs tightening in many respects before it can begin to function.

Administrative circles are not concerned about "hot oil," feeling they can blot this out in a short time but they are aroused over present runs to stills and the resultant addition of gasoline to storage. This addition totals approximately 2,000,000 bbls. in the past three weeks. If refiners continue this throughput, expecting a 6½-cent price after December 1, the administration may retaliate by delaying the effective date of the price fixing plan and by further reducing the crude allowables set for December and January.

It is impossible to determine when the regional allowables for refinery runs will be worked out. A vigorous battle is expected over price fixing.

There is still pending before the Federal Trade Commission its decision on lease and agency contracts in respect to fair trade practices. Reference to such contracts was omitted from the oil code. General Johnson stating he would accept the Trade Commission's decision as a court precedent.

Stocks of domestic and foreign crude oil at the close of the week ended October 21 amounted to 345,351,000 bbls., a decrease of 1,848,000 bbls. from the total of 347,199,000 bbls. reported for the preceding week, Harold L. Ickes, Secretary of the Interior and administrator of the oil code, announced. This decrease represented a daily average decline of 264,000 bbls. Stocks of domestic crude oil totaled 342,915,000 bbls., a decrease of 1,664,000 bbls. from the total of 344,579,000 bbls. reported for the preceding week, while stocks of foreign crude oil held in the United States amounted to 2,436,000 bbls., a decrease of 184,000 bbls. from the total of 2,620,000 bbls. reported for the preceding week.

Current reports of the oil industry indicate that petroleum refineries, during the week ended October 21, refined a daily average of 2,490,000 bbls., and that gasoline stocks during the week were increased by 750,000 bbls. The increase in gasoline storage, it was explained, is the equivalent in crude oil of about 240,000 bbls. daily, which represents approximately the excess throughput of crude oil at domestic refineries during the past week.

CRUDE PETROLEUM STOCKS REPORTED BY COMPANIES HOLDING 100,000 BBLS. OR MORE

(Received and tabulated by the U. S. Bureau of Mines, Washington, D. C.)

Grade of crude oil—	Stocks held by reporting companies Oct. 14, 1933 (barrels)	Stocks held by reporting companies Oct. 21, 1933 (barrels)	Change from Oct. 14, 1933 (barrels)
Pennsylvania Grade	5,433,000	5,490,000	+ 57,000
Other Appalachian, including Kentucky	1,022,000	1,006,000	— 16,000
Lima-Northeast Indiana-Michigan	1,372,000	1,351,000	— 21,000
Illinois-Southwest Indiana	10,793,000	10,774,000	— 19,000
North Louisiana and Arkansas	12,679,000	12,390,000	— 289,000
West Texas and Southeast New Mexico	33,375,000	33,018,000	— 357,000
East Texas	47,731,000	47,268,000	— 463,000
Other Mid-Continent	152,241,000	152,286,000	+ 45,000
Gulf Coast	17,104,000	16,653,000	— 451,000
Rocky Mountain	27,291,000	27,264,000	— 27,000
California	*35,538,000	35,415,000	— 123,000
Total domestic crude	344,579,000	342,915,000	—1,664,000
Foreign crude	2,620,000	2,436,000	— 184,000
Total crude	347,199,000	345,351,000	—1,848,000

*Revised due to transfer of 500,000 bbls. to fuel oil stocks—the revised figure for October 7 was 35,496,000, due to transfer of 550,000 bbls. to fuel oil stocks—figure for August 31 unchanged at 35,410,000 bbls.

Automotive and Refinery Engineers Join to Study Problem of Economically Satisfying Customer

By C. O. WILLSON

CHICAGO, Oct. 25.—Engineers and salesmen of the oil and automotive industries attending the sessions of the A.P.I. annual meeting here this week aired their views regarding each other's sales and manufacturing practices with results which, it is hoped, will prove generally beneficial. Entire sessions on the programs of both the refining and marketing divisions of the Institute were given over to the discussion of problems of concern to these closely allied industries. Speakers stressed the interdependence of the two industries in satisfying owners of over 24,000,000 varying types of motor vehicles. Another mutual interest is based on the fact that the oil industry is one of the largest fleet owners of automobiles and trucks.

In the prepared papers and informal discussions the shortcomings of the oil industry were pointed out by the motor vehicle representatives and vice versa. At the same time the co-operative accomplishments of the past were explained with the hope expressed that through the discussion and solution of current problems the two industries could facilitate their continued expansion.

Oil Industry's Position

Most of the case for the oil industry was presented by A. Ludlow Clayden, engineer with the Sun Oil Co., who for several years has made a special study of the mutual sales and technical problems of the two industries making his headquarters in Detroit. As representative of how the oil industry had been "made the goat of the automobile salesman" a preprint of Mr. Clayden's paper was published in The Oil and Gas Journal October 26.

J. F. Winchester, of the Standard Oil Co. of New Jersey, discussed the "Effect of Design and Other Factors on the Servicing and Operation of Motor Vehicles." He also suggested changes in fuel systems to permit the use of more volatile gasolines along with several other features in design which would be of special benefit to large users of motor transportation in the oil industry.

Automobile Manufacturer's Viewpoint

Greater uniformity in motor fuel specifications is of prime importance to the automobile manufacturers, according to J. R. Macauley, Jr., of the Chrysler Corp. in pointing out the difficulties in engine design when the vapor pressure of the fuels range from 6½ to 13 pounds with a range in antiknock value from 49 to 80 octane. He expressed approval of the development of the past year which through the use of tetraethyl lead has enabled major distributors to offer a motor fuel of uniformly high antiknock rating selling at the regular grade price. He indicated that the higher the antiknock rating of these regular grade fuels could be made the better it would be from the standpoint of building higher compression engines which he said had contributed more than any one thing in enabling manufacturers to improve the efficiency of their cars.

In regard to volatility which he ranked next to antiknock properties he said uniformity was necessary because there is a loss in power output of engines unless the designer makes a proper decrease in the amount of heat applied to the mixture. The heat is necessary for proper distribution to cylinders. He took cognizance of the wide demand in the oil industry that fuel systems be redesigned in engines to permit the use of more volatile motor fuels but expressed the opinion that it will take time for the automotive engineers to satisfactorily solve this problem. Regarding this particular problem, Mr. Macauley said in part:

"A change in the volatility of the gasoline marketed from winter to summer as now practiced by many oil companies is desirable if carefully governed. I know that the petroleum technician is under considerable economic pressure to use more volatile fuels; but if he lets his desire outrun the reasonable limits of performance in the cars, then the result is going to be a good deal of trouble for all of us. The heat content of various gasolines varies considerably but the heat content per cubic inch of normal mixture varies very little; and if the amount of heat necessary for proper distribution is applied to the manifold, I think we may look forward with confidence in the future to the use of more volatile fuels—providing we can learn how to handle them in the fuel supply and fuel-metering systems of the cars." He asked for more general support and participation in the work of the Co-operative Fuel Research Committee.

The complaint that car owners use too heavy motor oils due to the recommendations of those in charge of retail sales for the oil companies was expressed by W. H. Graves, a widely known engineer of the automobile industry who is connected with the Packard Motor Car Co.

He quoted the data of one oil company which showed the following distribution of motor oil sales:

Per cent—	S.A.E. No.
65	40
25	50
7	30 and 60
3	20
0.1	10

The position of the car manufacturer is that the use of these heavier oils is not desirable under most operating conditions. They place an unnecessary load on the starting equipment and through faulty lubrication, bring service troubles. The oil companies' position is that consumers request the heavier oils due to the greater economy in use. Mr. Graves presented data showing that the actual saving in the quantity of motor oil used between the heavier and lighter oils was much less than commonly supposed.

The solution of this problem as explained by Mr. Graves is to support the program of the Society of Automotive Engineers which aims to educate the public as to the desirability of using the lighter oils. In this connection he explained briefly the findings of a special committee of the lubricants division of the Society of Automotive Engineers which started to work last June to collect and study available data on cold weather motor lubrication. This investigation covered cold starting, safe lubrication, oil consumption and noise. Partially as a result of this investigation several companies adopted viscosity standards for motor oils used throughout the United States and Canada. The companies approving these recommendations to which wide publicity are to be given are Buick, Cadillac, Chevrolet, Chrysler, Dodge, Hudson, Essex, Oldsmobile, Packard, Plymouth and Pontiac. Others are expected to take similar action in the immediate future. The recommendations are:

"The proper viscosity or body of oil to use for your car under various temperature conditions is as follows:

Below 15° F. to any higher temperature normally encountered with this minimum .....10-W plus 10% kerosene
Above 15° F. to any higher temperature normally encountered with this minimum 10-W
Above 0° F. to any higher temperature normally encountered with this minimum 20-W
Above 32° to 100° F. .....S.A.E. 30

"For high summer temperature or prolonged high-speed driving, S.A.E. 30, 40, or 50 may be used—provided the oil is not too high in viscosity or body at the temperature at which the engine is to be started. The company supplying the oil must be depended upon to furnish an oil sufficiently low in viscosity or body to permit starting."

Name Marketing Committees

In order to correlate the efforts of the marketing division of the industry in the continuous program of supplying products in conformity with the changing motor demands and to study the many problems of modern merchandising the institute appointed the following 20 members of the general committee for 1934:

W. T. Akins, Skelly Oil Co., Kansas City, Mo.; J. W. Carnes, Sinclair Refining Co., New York; H. D. Collier, Standard Oil Co. of California, San Francisco; J. D. Collins, Tide Water Oil Co., New York; H. W. Dodge, The Texas Co., New York; S. B. Eckert, Sun Oil Co., Philadelphia; Frederick Ewing, Standard Oil Co. of New York, New York; H. D. Frueauff, Cities Service Co., New York; W. V. Hartmann, Gulf Refining Co., Pittsburgh; G. H. Humphrey, Standard Oil Co. of Nebraska, Omaha; Allan Jackson, Standard Oil Co. (Indiana), Chicago; V. H. Kelley, Union Oil Co. of California, Los Angeles; R. D. Leonard, Atlantic Refining Co., Philadelphia; R. W. McDowell, Mid-Continent Petroleum Corp., Tulsa; George C. Morris, Pure Oil Co., Chicago; C. G. Sheffield, Standard Oil Co. of New Jersey, New York; C. S. Smith, National Refining Co., Cleveland, Ohio; H. A. Trower, Phillips Petroleum Co., Bartlesville, Okla.; W. G. Violette, Standard Oil Co. of Kentucky, Louisville; and W. C. Burns, Richfield Oil Corp. of New York, New York.

The following were appointed by President Byles as members of the General Committee: W. H. Ferguson, Continental Oil Co., Denver, Colo.; E. T. Moore, Simms Petroleum Co., Dallas, Tex.; E. B. Reeser, Barnsdall Corp., Tulsa; Charles L. Suhr, the Pennzoil Co., Oil City, Pa., and J. C. van Eck, Shell Union Oil Corp., New York.

Use of Solvents in Oil Refining Offers Greatest Interest to Technologists

By C. O. WILLSON

CHICAGO, Oct. 26.—The chemistry of petroleum came to the fore in the refinery technical sessions of the annual meeting of the A.P.I. which closed here today. A large majority of the papers which were presented at the four sessions of the refining divisions today and yesterday were concerned with research and development work for which the petroleum chemists have been largely responsible.

Two sessions yesterday were given over entirely to the latest developments in solvent refining. This phase of refinery processing, which has been the subject of considerable research work in recent years, has assumed major commercial importance over the past year. Most of the processes have been described in trade literature in recent months and the papers presented here for the most part explained recent developments with valuable operating data. The applications described centered on the manufacture of lubricating oils with some discussion of the possibilities of solvent refining in the production of various grades of asphalts.

The interest in this development was indicated in the large attendance, including technologists from foreign countries. Several units using various methods are either in operation or under construction at this time in this country and several large manufacturers of lubricants expect to close contracts for new installations before the end of the year.

The refiners and equipment manufacturers whose work in solvent refining was explained were as follows: Foster Wheeler Corp., the Texas Co., Atlantic Refining Co., Standard Oil Co. of Indiana, Max B. Miller, Imperial Oil Refineries, Ltd., and Union Oil Co. of California.

At the meeting of the refining division this morning a representative of the Chemical Construction Co. explained the production of sulphuric acid from refinery acid. H. C. Schutt discussed the fundamental factors governing the design of vapor phase cracking oil. The Knowles oven used in the production of coke also was described. Other papers were progress reports on fundamental research sponsored by the A.P.I. fund.

Elect General Committee

The following were elected to the general committee of the Division of Refining to serve during the coming year:

F. W. Abrams, Standard Oil Co. of New Jersey, New York; L. E. Bale, Standard Oil Co. (Ohio), Cleveland; C. B. Buerger, Gulf Refining Co., Pittsburgh, Pa.; W. F. Burt, Socony-Vacuum Corp., New York; L. R. Crawford, Producers & Refiners Corp., Independence, Kans.; F. B. Dow, National Petroleum Association, Washington, D. C.; C. L. Henderson, Vickers Petroleum Co., Wichita, Kans.; F. E. Halsten, Barnsdall Refineries, Tulsa; E. W. Isom, Sinclair Refining Co., New York; Emby Kaye, Skelly Oil Co., Tulsa; E. R. Lederer, Texas Pacific Coal & Oil Co., Fort Worth, Tex.; Harry Logan, United Refining Co., Warren, Pa.; K. G. Mackenzie, the Texas Co., New York; F. E. Rice, Phillips Petroleum Co., Bartlesville, Okla.; J. Noel Robinson, Tide Water Oil Co., New York; A. S. Russell, Standard Oil Co. of California, San Francisco; W. L. Stewart, Jr., Union Oil Co. of California, Los Angeles; F. W. L. Tydeman, Shell Development Co., San Francisco; C. B. Watson, Pure Oil Co., Chicago, and R. E. Wilson, Standard Oil Co. (Indiana), Chicago.

The following five members were appointed by President Byles: J. Howard Pew, Sun Oil Co., Philadelphia; W. M. Irish, Atlantic Refining Co., Philadelphia; P. M. Miskell, Empire Oil & Refining Co., Tulsa; Paul G. Blazer, Ashland Refining Co., Ashland, Ky., and D. J. Moran, Continental Oil Co., New York.

Combination Cracking Unit May Perform Wide Variety of Duties in Modern Refining Plant

By GEORGE ARMISTEAD, JR.
Chemical Engineer, Gasoline Products Co., Inc.

Prominent among the recent developments in refining practice has been the trend toward the close association of cracking with a variety of other operations. Out of this trend the individual type of unitary operation termed "combination" has been evolved. With its merits now well established by use, the combination process is appearing with increasing frequency in current construction and is recognizably assuming major importance among refining methods. Its advent is of general significance in marking a definite departure from the long-practiced segregation of the individual cracking and distillation operations.

The term "combination" is applied to the association of such functions as initial distillation of crude, viscosity breaking and naphtha reforming, with the main cracking operation in self-contained systems. Usually it involves also the production of ultimate yields of final products. The refiner of today thus has available the facilities for carrying out the processing of crude oil to completion, including cracking, in a unitary operation. Foremost of the advantages he may realize through this source are the conservation of waste heat from the cracking system, reduced labor and investment requirements per unit of fresh feed capacity, the reduced handling of intermediate products, and maximum yields of high antiknock gasoline. The importance of these, both in the erection of completely new plants and in supplementing existing capacity, explains the increasing adoption of combination operations by the industry.

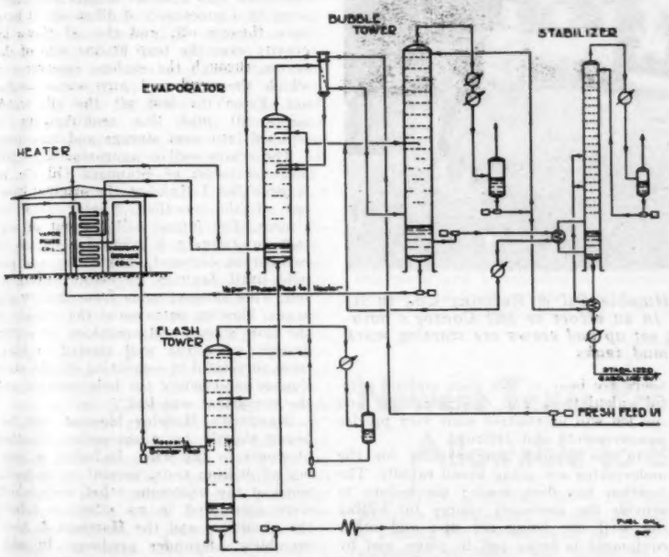


Fig. 1.—Combination unit employing vapor phase cracking and viscosity breaking for residual stocks

Research Background

The advent and present advanced state of combination operations reflect the achievements in fundamental research and process development work within recent years. While the advantage of associating other functions with cracking has long been recognized, the prevailing methods and lack of knowledge of fundamentals were factors of restriction for many years. These limiting conditions restricted the combinations to elementary forms such as effecting crude topping, steam generation, and similar operations, with the waste heat of cracking systems. Indeed, the long-existing size limitations of cracking systems, and the lack of precise design data practically excluded more advanced combinations, and favored complete separation of individual operations.

Eventually, it was development work, enlarged in scope, which proved the practical possibility of combination design. Laboratories whose equipment included pilot plants, duplicating in minature the operating conditions of the refinery, enabled research to determine the fundamental factors and to establish their interrelated values and effects in terms of plant operation. From development work came many advances including primary cracking or viscosity breaking which was affiliated with the main cracking operation, pressure tar flashing, and naphtha reforming. The development of redistilled circulation, wherein a clean heater feed is prepared by distillation in the cracking fractionation system, greatly facilitated the progress, in allowing much higher temperatures and cracking rates to be employed, and increasing the operating range of cracking operation.

In addition to means of applying laboratory results precisely to equipment of commercial size, the research and development work, responsible for this progress, yielded fundamental operation and design data which were valuable. In respect to the complex combination systems, this satisfied an important requirement, in the degree to which precise design is required to furnish adequate capacity and flexibility of interrelated parts, without resort to the use of inordinate safety factors. The design of each unit is a separate problem defined by the processing requirements and the raw stock. Accordingly, it has been indispensable that optimum operating methods and design, developed on laboratory or semiplant scale equipment, be applicable with accuracy to the commercial design. To this end, the research has embraced the field from development of fundamentals to extensive correlations of the small-scale and plant equipment. The results achieved are reflected in the commercial installations, now in use, whose actual performance has duplicated within almost negligible limits the performance for which they were designed. Finally, the flexibility necessary for optimum operation has been secured, without material overcapacity of individual parts.

Unit for Reduced Crude

Consideration of representative types of combination operation is properly introduced by an example of one of the simpler forms, designed for the handling of reduced crude, as recently erected by the M. W. Kellogg Co. for a Mid-Continent refiner. A diagram of this type of installation is presented in Figure 1. Generally, the operations comprise primary cracking, vapor phase cracking, fuel oil flashing and naphtha stabilization.

Fresh reduced crude feed is introduced to the fuel flash tower to be preheated with hot flashed vapors, and is collected on a trap-tray, with included heavy condensate, to be passed through the primary cracking section of the heater which discharges into the high pressure evaporator. The feed for the vapor phase section of the heater is taken from the base of the bubble tower, the boiling range of this stock being regulated by the temperature of the evaporator top, so as to exclude high boiling fractions unsuitable for the vapor phase temperatures. After passing through its section of the heater, and attaining a temperature of about 960 degrees, the vapor phase cracked stream emerges to join the discharge from the primary cracking coil and enter the evaporator. The composite fuel oil in the evaporator, under about 200 pounds pressure, is released to the fuel oil flash tower, under low pressure, where it is reduced down to the desired viscosity and the evolved cycle stock vapors are returned to the cracking system. The stabilizer operates as an integral part of the system using recycle gas oil reflux as the source of heat.

It will be noted that the heater is of the dual combustion chamber type, separate radiant sections being provided for the two streams, to facilitate control of radiant heat absorption, although both are served by a common convection zone. This arrangement affords the flexibility of two individual furnaces, yet permits the advantageous use of the convection surface and confines the total surface within a single setting.

The operating results of this installation on a reduced crude may be illustrated by the following data, typical of approximately 300 hours of operation.

FRESH FEED
Mid-Continent Reduced Crude, 23.2° A.P.I., Comprising 60-65% of Original Crude

Yields

	Per cent
Gasoline	42.31
Fuel oil	49.03
Gas and loss	8.66
Total	100 00

Products

	Gasoline	Fuel oil
Endpoint	400	....
Octane No. CFR-M	70	...
Viscosity 122 Furol	...	196
B.S.&W.	...	.24%

While representing the desirable plant operating conditions, these results do not define the range generally characteristic of the operation. The operation is effective on a reduced crude, or similar residual stock, by virtue of the combined fuel oil flashing and primary cracking steps, and in a more or less recognizable form it appears in other systems.

Units for Running Crude

More complex forms of the combination units, as employed for running crude to ultimate products, are shown in Figures 2 and 3. Erected by the M. W. Kellogg Co., and put in service within the last 12 months, these units represent the advantageous association of crude topping, primary cracking, vapor phase cracking, fuel oil flashing, naphtha reforming, clay treating and naphtha stabilization. From crude oil charge they produce a stabilized low-gum gasoline of the desired antiknock rating, fuel oil, and gas, directly from the system. Light fuel or furnace oils may also be trapped out directly if desired. The compactness of the equipment serving these functions permits very large

(Continued on Page 22)

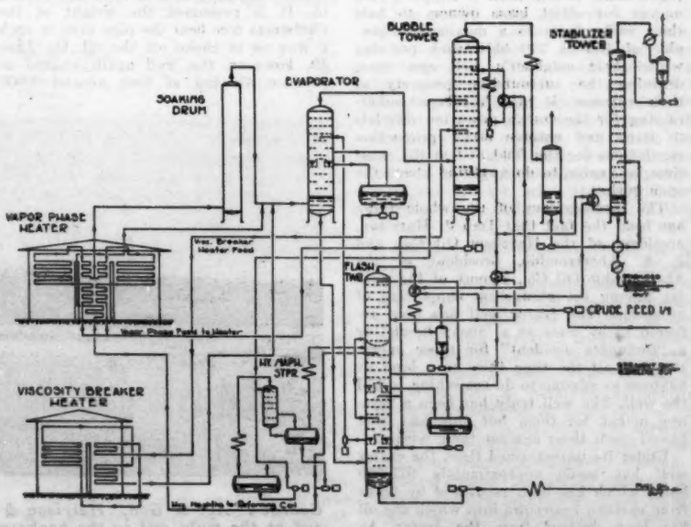


Fig. 2.—A combination unit for crude feed providing preliminary distillation, naphtha reforming and cracking to completion

Engineers Testing Skill Against Wild Well Which Has Flowed Unrestrained at Conroe for Months

By NEIL WILLIAMS
Gulf Coast Bureau, The Oil and Gas Journal

HOUSTON, Tex., Oct. 31. — Conroe's notorious "act of God," Harrison & Abercrombie's crater producer, is to be given a chance to prove its mastery over the wits of man and skill of petroleum engineering in a concerted attempt of operators to kill it and end its reign of freedom from production restriction orders of Federal and state officials.

The well, located on the Alexander lease in the John McHorse Survey and which has been flowing unrestrained and without interruption since June 19, was purchased the past week by Humble Oil & Refining Co., which will direct its efforts toward stemming this excessive drainage of the Conroe Field. All operators in the field have been invited to participate in the work and share in any future profits which may be derived.

The Humble company paid a total of $300,000 in cash for the well together with the drilling unit, consisting of approximately 15 acres, on which it is located. Under terms of the transaction Harrison Oil Co. and Abercrombie Oil Co., the former joint owners, will continue to receive all the oil produced and recovered until the well is killed, if ever. They also retain the remainder of their Alexander lease, on which there are four other wells.

The attempt to kill the well probably is one of the most interesting petroleum engineering feats of its kind ever undertaken in the history of the oil industry and will be watched not only by Conroe operators but by oil men everywhere. Many of the best production men and engineers of the business have said it is impossible to stop the flow of the well. So far nothing has been tried and operators have stood helplessly on the brink of the crater watching the oil gush forth by the thousands of barrels daily to hasten the day of depletion of the reservoir energy.

A Troublemaker

The crater producer has been a constant thorn in the side of all operators in the field, particularly those owning offset leases, and also to officials and others entrusted with the task of direction of conservation of the state's oil resources and enforcement of proration regulations. It has been a temper-trying matter for offset lease owners to hold their wells down to a maximum allowable of 100 to 200 bbls. each per day while their neighbor's well ran open, draining the surrounding property at their expense. It also has been embarrassing for the state's proration officials to issue and enforce strict production regulations for the field and at the same time be unable to do anything about the open gusher.

The inconsistency of the whole thing has been the fact that Dan J. Harrison, president of the Harrison Oil Co., and J. S. Abercrombie, president of the Abercrombie Oil Co., owners of the well, are among the staunchest supporters of proration. The crater well has been referred to by some as a "lucky break" or a "fortunate accident" for those operators but all the time they have been as anxious as anyone to do something to kill the well. The well truly has been a revenue maker for them but this has been forced upon them against their wishes.

Under its unrestrained flow, the crater well has made approximately 875,000 bbls., which has been recovered by traps from earthen reservoirs into which the oil has been drained from the crater. As high as 12,000 bbls. daily has been recovered and during September an average of more than 8,000 bbls. daily was pumped from the earthen pits. For the past several weeks the yield has been running around 6,000 to 6,500 bbls. daily.

Cratered in January

The well cratered late last January and early February when high pressure gas, supposedly migrating through shallow sands from earlier near-by blowouts, blew out around the outside of the surface casing. It previously had been completed last December in the Conroe sand at a total depth of 5,097 feet, making on test 120 bbls. the first hour through a half-inch choke. While the blowout came from shallow sands, the operators did not have sufficient warning to kill the production from the main sand and when the Christmas tree and pipe settled and sank from sight in the crater there was no way to stop the flow of oil.

In a period of several weeks from the time it cratered the well produced approximately 40,000 bbls. and then, for some reason, quit flowing although the crater continued to boil from gas coming in. It is presumed the weight of the Christmas tree bent the pipe over in such a way as to choke off the oil. On June 19, however, the well again started to produce, flowing at first around 3,000 bbls. daily and then steadily increasing. It is supposed that the Christmas tree broke off entirely leaving the hole open. Since then there has been no interruption in the flow.

Present plans of the Humble Oil & Refining Co. for killing the well call for the drilling of another well to be located between 400 and 500 feet north and slightly east of the crater and deflecting the hole to a point near the bottom of the hole of the crater well, into which will be pumped mud and cement. Engineers are busy at this time making careful calculations and determinations and the job will necessitate some very precise measurements and drillings.

On the ground, preparations for the undertaking are going ahead rapidly. The location has been made; six boilers to provide the necessary energy for killing the well are being set up; and other equipment is being put in place, and by the time this is read actual drilling of the relief well probably will have been started.

According to many engineers, the odds are greatly in favor of failure of the plan as only expert marksmanship and good luck in drilling will result in the bit of the relief well hitting such a target. The Humble officials also admit the success of the undertaking is only a chance the company is taking, but if it is a failure something else will be tried.

Here is shown the work started by Humble Oil & Refining Co., in its preparations for drilling a relief well in an effort to kill Conroe's notorious crater well. Six boilers are being set up and crews are starting work on fuel and mud tanks

Depth of Crater Unknown

The depth of the crater is an unknown factor. A number of attempts to sound the center have been made but without success. Repeated efforts were made with a drag line to catch onto the Christmas tree or other equipment which went into the hole but they also failed. In the hole, in addition to the Christmas tree, approximately 1,200 feet of 10¾-inch surface casing and approximately 5,050 feet of 7-inch flow string with the well screen, and a string of 2½-inch tubing which, in completion of the well, had been set on lead seal.

The portion of the lease on which the crater is located has been cleared and converted into a series of pits and reservoirs by a succession of dikes which have been thrown off, and the oil flows by gravity over the trap at one side of the crater, through the various reservoirs in which the sand and any water settles out. From the last pit the oil, which meets all pipe line requirements, is pumped into steel storage and into lines.

The crater well is approximately 1,000 feet northwest of Standard Oil Co. of Kansas' No. 1 Madeley, the original blowout of the so-called "crater area" of Conroe. The latter well got out of control on January 8 while in process of completion, cratered, caught fire, and ran wild until January 24 before killing itself. This blowout came from shallow gas sands, blowing out around the outside of the flow string, and operators, by acting quickly when the well started to blow, were successful in cementing off the main Conroe sand before the hole cratered and the equipment was lost.

Standard's Madeley blowout was followed shortly by a succession of other blowouts in the area, including a number of drilling tests, several water wells, some of the numerous relief wells which were attempted in an effort to relieve the situation, and the Harrison & Abercrombie's Alexander producer. In addition, two other producing wells, one of which was Harrison & Abercrombie's No. 2 Alexander, north offset to the first Standard well, started to bubble gas and crater around the outside of the surface casing but operators were successful in saving them. The situation caused considerable concern to operators for some

(Continued on Page 42)

Conroe's "Act of God," Harrison & Abercrombie's No. 1 Alexander crater well. In the foreground is the crater and at the right and in the background are the dikes and reservoirs for the collection of the oil. The sprays seen at various places in the picture are streams of water directed at the oil as it flows over the traps of the reservoirs to settle the sand. The area is marked with blow-holes and small craters

Gas-Air Repressuring in Eastern Field Solves the Sand Problem Which Banned Flooding

By ROBERT C. CONINE

WARREN, Pa., Oct. 31.—Scientifically applied, gas-air repressuring methods are the ideal solution to the broken sand problem which has banned water flooding practices in this producing district, according to C. C. Hogg, Pleasantville, vice president and general manager of National Petroleum Co. Activities of the National company, extending into Ohio, are centering on an improvement program featuring the "four spot" pattern for repressuring operation.

Air-gas injection on the four-spot plan is in a sense beyond the experimental stage. Technique in these particular operations has undergone steady improvement since 1922, and operators, such as Mr. Hogg, are convinced that their newest plans will bring maximum recovery not only from the faithful Venango sand, but also from the flashy first sand. These expectations are grounded on steadily increasing evidence of actual operations which corroborate laboratory findings, and which attest the value of complete core records from test wells.

While not more than an eighth of the oil in the sand is available by ordinary pumping methods, engineers operating the five and four-spot projects estimate that they are draining more than a fourth of the oil present, and they expect to increase this percentage as their new program gets underway. The accompanying photographs show scenes of current activity on the Hunter-Campbell lease of the National company, Warren County, where the principal "four-spot" work is being carried on. The laboratory where core samples from test wells are tested for porosity (permeability), oil content, and examined for particular characteristics which might modify the general program at points, is a few hundred yards from this latest completion.

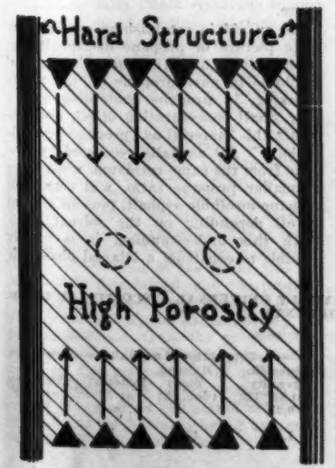


Fig. 2.—Schematic on application of repressuring on a pay sand strip bounded by streaks of impermeable sand. The object is to determine the highest possible yield from an oil bearing sand through air-gas injection

On this lease the Venango sand is reached at 650 to 900 feet. The well shown here is in this sand at 691 feet. The thickness of the sand here is 35 feet, and that of the first sand, reached at less than 200 feet, has a thickness of 40 feet. This addition will be cleaned out this week and is expected to contribute its quota of 6 bbls. daily until it is adjusted with the operating schedule for the lease. The well should produce 2,000 bbls. the first year. It is estimated that the Venango sand under this lease contains about 11,000 bbls. of oil per acre, and it is considered that at least 3,000 bbls. per acre are available through gas-air repressuring. Cost of development in this district is said to be $800 per acre, as compared with $3,000 per acre in the water flooding areas where entirely different problems must be met. It is admitted that while gas repressuring is widely adaptable, there are conditions in certain structures which completely frustrate attempts at repressuring with gas. A notable example is the Speechley sand in Butler County where impractically high pressures (11,000 pounds) have been applied experimentally without effecting a drive on the oil contained in this formation. The maximum pressure employed in the Hunter-Campbell lease operations is 200 pounds, and is usually little more than half of that.

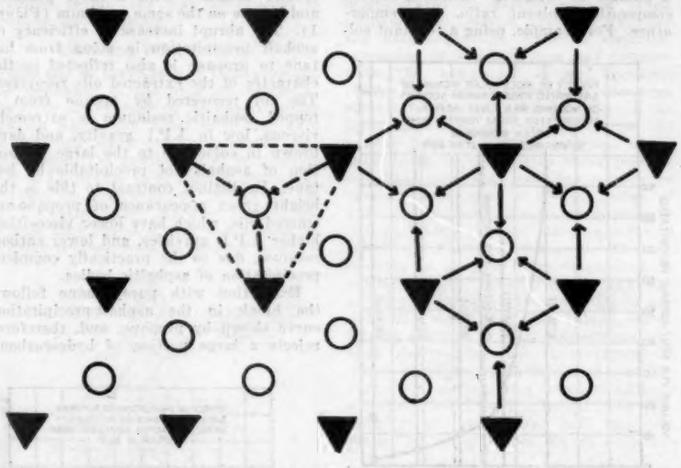


Fig. 1.—Placement of injection wells (triangles) and producing wells (circles) in the "four spot" pattern. This is sometimes referred to as a "seven spot" operation

"Four Spot" Pattern

The accompanying diagram, Figure 1, shows the placement of producing wells (circles) and air-gas injection wells (triangles) in accordance with the "four spot" pattern. It will be noted that a drive is exerted on each producer by three injection wells. It may also be seen why this is sometimes called a "seven spot" pattern. Radiating from a central injection well, line of propulsive force may be taken as being directed against six encircling producers counter to a ring of pressure sources which form an encompassing wall for a "seven spot" system. The producing wells are spaced 180 feet from each other. The "four spot" pattern covers an acre.

In the development of pattern drilling in Venango and Warren Counties, Mr. Hogg has encountered peculiar structures which take the form of streaks of practically impermeable sand which wall in fairly wide strips of good oil sand. These formations are the basis of an experiment now being worked out by Mr. Hogg. It is planned to bound the "immured" paying strip with injection wells as shown in Figure 2. Pressure will then be applied for a period of as much as a year, depending upon developments. At the proper time, when it is estimated that the gas pressure drive is being exerted throughout the enclosed strip sufficiently, one or two producing wells will be drilled in the center of the pressure area. Complete core tests will be made and the estimated oil reserve will be used to check actual production or per acre recovery.

Control in Repressuring

The gas-oil ratio is checked carefully by means of instruments. The proper ratio is 5,000 feet of air-gas per barrel of oil produced. The average well on the lease produces 3 bbls. per day, and it has been found by experiment that the 15,000 feet of gas can be supplied by operating each injection well for half an hour daily. Those producers which continue to show too much gas are pumped only once a week, when the oil will have built up and can be pumped out in three or four hours.

Nothing is left to guesswork in the gas repressuring districts. On the Hunter-Campbell lease underground conditions have been studied and this information is used to predict the behavior of each new well long before it is shot and put on production. Costs have been lowered steadily and in some cases the oil can be lifted for as little as 32 cents a barrel. Throughout a large part of the Pennsylvania Grade area the operating costs approximates closely the present advanced crude oil markets. Interest is growing rapidly in gas repressuring and water flooding throughout these producing areas, and it is anticipated that present high lifting costs will be considerably reduced within a short time.

Newest Texas Proration Order Reduces Allowable to 878,216 Bbls. Daily

AUSTIN, Tex., Oct. 30.—The Texas Railroad Commission, October 28, called a hearing for November 9 on state oil allowable revisions, and issued at the same time a new order reducing the former 957,555-bbl. daily production limit to 878,216 bbls. daily.

The order of the commission says:

Therefore, it is ordered by the Railroad Commission of Texas that effective at 7 a.m., Monday, October 30, 1933, and continuing until otherwise ordered, its order of October 17, 1933, in above cause be and the same is hereby amended in the following particulars, to-wit:

1. Rule 2 of Division 2 of that portion of said order which governs the Panhandle district of Texas is amended to read as follows:

"Rule 2. Not more than 42,000 bbls. of crude oil shall be produced from said district during any day of the effective period of this order."

2. Rule 23(a) of Division 3 of that portion of said order which governs the East Texas Field is amended to read as follows:

"Rule 23(a). It is ordered that during each 24-hour period beginning at 7 a.m., Central Standard Time, October 30, 1933, the owner or operator or manager of each well in the East Texas Field shall be permitted, either collectively or individually, to produce daily from each well a maximum of 5.75 per cent of its average hourly potential producing capacity as determined by the commission."

3. Rule 2 of Division 4 of that portion of said order which governs the East Central Texas Field is amended to read as follows:

"Rule 2. Not more than 43,911 bbls. of oil per day shall be produced from said fields in said district during any day of the effective period of this order. Said 43,911 bbls. to be allocated to the various fields in the following amounts:

	Bbls.
Van	37,500
Boggy Creek	615
Currie	164
Mexia	2,250
Powell	2,800
Richland	42
Wortham	140
Corsicana	400

4. Rule 2 of Division 5 of that portion of said order which governs the North Texas district is amended to read as follows:

"Rule 2. Not more than 56,500 bbls of crude oil shall be produced from said district during any day of the effective period of this order."

5. Rule 2 of Division 6 of that portion of said order which governs the West Central Texas district remains unchanged and the daily allowable production of said district remains at 25,000 bbls.

6. Rule 4 of Division 7 of that portion of said order which governs the West Texas district is amended to read as follows:

"Rule 4. Not more than 119,613 bbls. of oil per day shall be produced from said district during any day of the effective period of this order, which shall

(Continued on Page 22)

Results Obtained From Use of Propane During Dewaxing and Treating of Lubricating Oil

By ULRIC B. BRAY, CLAUDE E. SWIFT and DONALD E. CARR
Union Oil Co. of California*

The problem of producing superior lubricants from asphaltic or mixed-base crudes has been given wide attention during recent years, and as a result several new processes and improvements in existing methods of manufacture have been devised. The purpose of this paper is to present some outstanding uses of propane in lubricating-oil manufacture which have been studied in the laboratories of the Union Oil Co. of California over a period of the last five years.[1] It will be shown that propane may be used advantageously:

1. To de-asphaltize asphaltic or mixed-base residua.
2. To dewax residual or distilled oils.
3. As a diluent in acid and clay treating solvents.
4. In combination with selective refining.

De-asphaltizing With Propane

The use of propane to separate lubricating oils from asphaltic residues in contrast to distillation makes possible the recovery and utilization of the lubricating fractions of extremely high molecular weight which are most difficult to distill without decomposition. The ease of recovery of these residual lubricants in their natural state eliminates to a considerable extent the necessity of selecting crudes of low asphaltic content for the production of residual bright stocks and cylinder stocks. The recovery of these residual oils also furnishes stocks for the production of oils of low viscosity-temperature susceptibility, because some of these high-molecular-weight residual fractions exhibit the flattest viscosity-temperature curves of any oils obtainable from a given crude.

The removal of asphaltic material by means of liquefied propane is readily accomplished if careful consideration is given to the choice of conditions. The operation consists essentially in mixing the residuum with the required quantity of propane at the proper temperature until equilibrium is reached, and separating the two phases by settling. With the proper choice of conditions, the propane phase—consisting of a solution of the lubricating oils—is obtained as a clear, transparent, super-natant liquid; while the asphalt phase can be brought down as a heavy, viscous liquid containing sufficient dissolved propane to permit ready transfer by pumping. The process is capable of continuous operation with simple equipment.

The extraction of residual oils with low-molecular-weight hydrocarbons, i.e., ethane, propane, the butanes, and mixtures of these, leads to a better understanding of the composition of asphalt, because the character of the asphalt recovered from the process depends upon a number of variables—including solvent composition, solvent ratio, and temperature. For example, using a constant solvent ratio of say 5 to 1 at 80° F., butane may reject from a certain residuum a small amount of high-melting asphalt; propane will reject a larger quantity of lower-melting asphalt having the general characteristics of the usual steam-blown product; whereas, pure ethane will reject a very large proportion of the residuum as a heavy asphaltic liquid. Table 1 and Figure 1 illustrate the effect of employing the different solvents on a residuum obtained from a typical low-cold-test crude topped to remove lighter fractions through the gas-oil range. For comparison, tests using pentane and hexane are shown. It may be stated that substantially pure propane comes the nearest of all the solvents to segregating the residuum into lubricating oil and asphalt of usual characteristics.

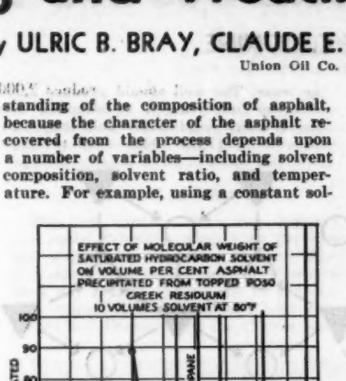

EFFECT OF MOLECULAR WEIGHT OF SATURATED HYDROCARBON SOLVENT ON VOLUME PER CENT ASPHALT PRECIPITATED FROM TOPPED POSO CREEK RESIDUUM
10 VOLUMES SOLVENT AT 80°F
VOLUME PER CENT ASPHALT PRECIPITATED
MOLECULAR WEIGHT HYDROCARBON SOLVENT
ETHANE
PROPANE
50%BUTANE - 50%PROPANE
BUTANE
PENTANE
HEXANE

Fig. 1.—Results in topped Poso Creek residuum

Considering the efficiency of asphalt separation with decreasing average molecular weight or decreasing average boiling point of the solvent, we find a quite regular progression of improvement in going from hexane to butane; but, upon going to lower average boiling points and molecular weights, we find a surprising increase in efficiency of asphalt precipitation—far greater than would be expected on the basis of the results obtained with butane and the higher-molecular-weight solvents. In going from butane to propane, for example, the increase in asphalt precipitated is about two and a half times as great as that to be predicted on the basis of the results obtained with hexane, pentane, and butane on the same residuum (Figure 1). The abrupt increase in efficiency of asphalt precipitation in going from butane to propane is also reflected in the character of the extracted oils recovered. The oil recovered by butane from a topped asphaltic residuum is extremely viscous, low in A.P.I. gravity, and dark brown in color due to the large proportion of asphalt not precipitable by butane. In distinct contrast to this is the bright green appearance of propane-extracted oils, which have lower viscosities, higher A.P.I. gravities, and lower carbon residues, due to the practically complete precipitation of asphaltic bodies.

Extraction with pure ethane follows the break in the asphalt-precipitation curve shown by propane, and, therefore, rejects a large portion of hydrocarbons which in reality come under the classification of lubricating oils. In other words, pure ethane proceeds farther than is usually desirable in separating the heavy fractions from the lighter lubricating fractions; but very unusual residual oils of low viscosity, which are extremely low in color and carbon residue and of high flashpoint, can be produced for special purposes by the use of ethane on a well-fractionated residuum.

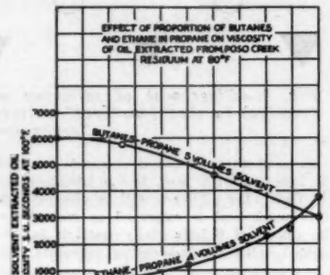

EFFECT OF PROPORTION OF BUTANES AND ETHANE IN PROPANE ON VISCOSITY OF OIL EXTRACTED FROM POSO CREEK RESIDUUM AT 80°F
BUTANES - PROPANE, 5 VOLUMES SOLVENT
ETHANE - PROPANE, 4 VOLUMES SOLVENT
SOLVENT EXTRACTED OIL VISCOSITY S.U. SECONDS AT 100°F
PER CENT PROPANE
PER CENT OTHER SOLVENT

Fig. 2.—Composition of solvent by volume

Effect of Temperature

Confining attention to a solvent of definite composition at a given temperature, the results obtained in the separation can be varied over a certain range by the choice of solvent ratios. With propane at 80° F., for example, and a topped residuum containing 15 per cent to 20 per cent of asphalt, it is found that the addition of small amounts of propane to the residuum up to a certain proportion serves only to reduce the viscosity in a manner analogous to the addition of any light solvent. Further addition of propane in a small amount beyond a critical ratio causes separation into two phases, with the asphalt phase occurring as a heavy, viscous liquid in comparison to the extremely fluid propane phase. The asphalt phase recovered at this point shows, after removing solvent, a low melting point due to incomplete removal of heavy oils, and the oil phase recovered may contain several per cent of asphalt. If the propane ratio is increased, the asphalt phase becomes more viscous in character; and, upon separating and evaporating the solvent, the melting point is found to have increased—due to more complete transfer of the heavy oils into the propane phase; and the oil recovered from the propane phase simultaneously shows a smaller asphalt content. Eventually a point is reached where further additions of propane produce no further perceptible improvement in fractionation of oil and asphalt, which then appears as a finely divided slurry settling from the propane solution. For convenience this ratio of propane, beyond which there is practically no improvement, is called the optimum propane ratio.

Figure 2 illustrates the variation in viscosity of the extracted oil with proportions of ethane or butane to propane. The changes in other properties of the extracted oils, such as gravity and carbon residue, are parallel. The butane used varied from substantially equal proportions of isobutane and normal butane to substantially all isobutane as the butane content decreased.

Figure 3 illustrates the effect of changing the volume ratio of propane on the viscosity and gravity of the oil recovered.

It should be pointed out that the residuum chosen for these illustrations is of the purely naphthenic type, containing practically no paraffin wax; but, in the case of wax-bearing residua, the wax is completely soluble in the propane at 80° F., and behaves as a corresponding amount of lubricating oil at that temperature.

As an aid in establishing a more complete picture of propane de-asphaltizing, we may focus attention upon the material insoluble in pure propane or, practically speaking, in propane containing only a very small concentration of oil, and designate this material as "propane-insoluble asphalt." All asphalts recovered by propane from the same residuum, when using a smaller propane ratio, will consist of propane-insoluble asphalt, plus an amount of oil depending on the solvent ratio. With this understanding, it is readily possible to construct a triaxial phase-rule

*Presented before Chicago meeting A.P.I., Oct. 25 to 26.

[1]Patents have been applied for on various features of these processes.

TABLE 1—PROPERTIES AND YIELDS OF OIL AND ASPHALT PRODUCED FROM POSO CREEK RESIDUUM (TOPPED TO 66 SEC. SAYBOLT UNIVERSAL VISCOSITY AT 100° F. ON OVERHEAD STREAM) BY EXTRACTION WITH LOW-MOLECULAR-WEIGHT HYDROCARBON SOLVENTS

(10 Volumes of Solvent at 80° F.)

Solvent—	Yield of oil (per cent by volume residuum)	Yield of asphalt (per cent by volume residuum)	Properties of extracted oil: Gravity deg. A.P.I. at 60° F.	Viscosity Saybolt Universal at 100° F.	Viscosity Saybolt Universal at 210° F.	Carbon residue (per cent)	Color N.P.A.	Properties of asphaltic residue: Specific gravity at 60° F.	Melting point (deg. F.)	Penetration at 77° F.	Ductility at 77° F.
Ethane	11.0	89.0	24.2	255	...	0.077	3½	0.98	...	soft	0
Propane (boiling point, —42° to —40° F.)	75.0	25.0	17.5	2,100	94	2.35	opaque	1.063	176	2	0
Propane, 50 per cent Butane, 50 per cent (boiling point, —42° to +36° F.)	87.3	12.7	15.3	4,000	119	4.2	opaque	....	275	0	0
Butane 50 per cent isobutane, 50 per cent normal butane (boiling point, 14° to 31° F.)	89.2	10.8	15.7	5,000	139	5.3	opaque	1.107	295	0	0
Butane (boiling point, 30° to 36° F.)	88.8	11.2	15.2	4,600	139	5.12	opaque	....	307	0	0
Pentane (boiling point, 82° to 100° F.)	95.20	4.8	14.5	10,000	192	6.23	opaque	....	320	0	0
Hexane (boiling point, 140° to 156° F.	98.0	2.0	13.8	15,000	208	7.09	opaque	....	325	0	0

diagram showing in succint form the composition of the phases to be expected from the asphaltic or mixed-base residuum when it is contacted with liquid propane in any proportion.

Experimentally, this is done by carrying out a series of careful extractions with varying propane ratios—on a given residuum; measuring the propane content of both oil and asphalt phases; and re-extracting the oil phase with a high propane ratio, in order to determine the asphalt passing into the oil phase with the initial solvent ratio. In re-extracting the oil, it is preferable to reduce the oil first by vacuum or steam distillation, in order to concentrate the asphalt in the bottoms—thereby bringing within reason the amount of propane necessary to obtain extreme selectivity. Having prepared the equilibrium chart from the phase analyses on a given reduced asphalt-bearing crude, we may predict what will happen when propane is mixed with the same crude topped to different degrees and, to a large extent, even the behavior of dissimilar crudes. With a different sample of residuum, it is necessary only to determine the asphalt-oil content of the material, i.e., locate the point on the asphalt-oil side of the triangle corresponding to the residuum itself, by performing an analytical extraction with an extremely high propane ratio, such as 20 to 1. The point on the asphalt-oil side of the triangle corresponding to the composition of the residuum in question is next joined with the propane vertex by means of a straight line; and we may then predict, for example, the critical proportion of propane necessary to afford a separation into two phases by taking the composition at the intersection of the straight line with the solubility curve. The prediction of optimum propane ratio for selectivity is also readily made.

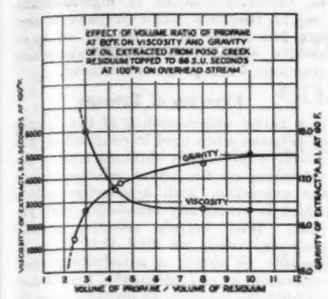

EFFECT OF VOLUME RATIO OF PROPANE AT 80°F. ON VISCOSITY AND GRAVITY OF OIL EXTRACTED FROM POSO CREEK RESIDUUM TOPPED TO 66 S.U. SECONDS AT 100°F. ON OVERHEAD STREAM
GRAVITY
VISCOSITY
VISCOSITY OF EXTRACT, S.U. SECONDS AT 100°F.
GRAVITY OF EXTRACT A.P.I. AT 60° F.
VOLUME OF PROPANE / VOLUME OF RESIDUUM

Fig. 3.—Effect of solvent volume ratio

In Figure 4, a phase-rule diagram, constructed from the results of propane analyses on Poso Creek residuum topped with steam to 66 seconds Saybolt Universal viscosity at 100° F. on the overhead stream, is presented. While some variation from the solubility curve is to be expected with crudes of widely different characteristics, the diagram has proved to be of considerable value in obtaining a practical estimate of the results to be obtained with a large number of residua of different characteristics. For example, from the extraction of McKittrick residuum topped to 81 seconds Saybolt Universal viscosity on the overhead stream, with 15 volumes of propane, the asphalt content of the latter was approximately determined, and the propane ratio necessary for separation into two phases was calculated by measuring the relative distances from the propane vertex and the McKittrick composition point to the intersection of a straight line between these points with the solubility curve. This calculated ratio was 0.7 to 1, while the ratio found by actual determination was 0.65 to 1.

Effect of Propane Ratio

The effect of lowering the temperature with a given propane ratio is to decrease the solubility of the asphaltic material in the propane-oil phase. Figure 5 illustrates the effect of variation in the temperature of propane extraction, on the gravity and viscosity of the extracted oil from a typical asphaltic residuum. With a wax-bearing residuum, wax begins to precipitate from the propane-oil phase at a temperature generally between 35° and 45° F., depending largely on the wax concentration and propane ratio. As the temperature is lowered successively, additional quantities of wax are precipitated until at —42° F. (the boiling point of propane at atmospheric pressure) the wax is practically completely precipitated along with a small amount of additional asphaltic or pseudo-asphaltic material. When dewaxing is to be accomplished, the propane and the residuum are usually at such temperatures that the resulting mixture is between 80° and 100° F., and any appreciable amount of asphaltic phase appearing is generally removed before the wax cloudpoint is reached upon chilling.

Dewaxing With Propane

The use of propane was first proposed for dewaxing in the hope of materially reducing the expense of the dewaxing operation which had acted as a hindrance in utilizing waxy crudes available, and had caused the production of lubricating oils in California to be limited practically entirely to low cold-test crudes of the Gulf Coastal type. At that time it appeared that unless a very economical dewaxing process could be devised, it would not be practical from an economic standpoint to manufacture paraffin-base lubricating oils from the stocks available. The use of propane as an internal refrigerant and wax precipitant appeared to offer a solution to this problem. During the long time of experimentation and development, a large variety of oils has been tested for dewaxing by means of liquid propane, and it has been possible to devise a successful dewaxing procedure for each sample of oil tested to date.

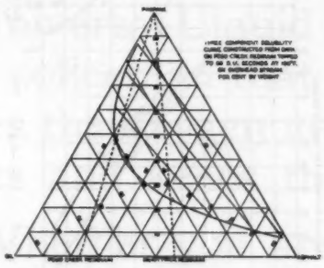


Fig. 4.—Three component solubility curve

Ease of Dewaxing

The ease and efficiency with which the refrigeration required for dewaxing can be accomplished by evaporating propane in the solution to be dewaxed is readily obvious; but the use of propane as the diluent at the moment of wax removal, by providing an excess of liquid propane over that required for refrigeration, provides a wax-precipitating medium of far greater efficiency than could be predicted on the basis of the wax-precipitating efficiencies of naphthas or pure hydrocarbons of different boiling ranges or average molecular weights. For example, it had been found that the solubility of wax in petroleum distillates increased as the average boiling point was decreased,[2] which indicated greater efficiency of wax removal by the use of kerosene and gas-oil fractions as diluents in dewaxing. This was also confirmed by common experience in pressing wax distillate, in which gas oil actually served as the diluent or wax precipitant, and in which pourpoints practically the same as the dewaxing temperature were obtained. With the pure compounds, i-decane, n-octane, n-heptane, n-hexane, and n-pentane, respectively, a consistent increase in wax solubility with decreasing molecular weight had been found[3]; and it appeared that a regular relationship existed which caused the use of low-boiling hydrocarbon diluents to be regarded with disfavor. However, actual experiments demonstrated the effectiveness of liquid propane (the fraction generally used being natural-gasoline stabilizer overhead consisting of about 80 per cent propane with the remainder divided between ethane and the butanes) as a dewaxing solvent, despite the poor behavior of the light naphthas in comparison to the heavier fractions. For comparison of results to be expected with other possible dewaxing solvents, solubility curves of paraffin wax with a melting point of 123° F. have been determined in propane and a number of other solvents, some of which are shown in Figure 6. The solubilities in propane were determined by sealing weighed quantities of wax and propane at liquid air temperatures in ampules of 4 mm. Pyrex glass tubing, warming the ampules to room temperature, and then determining the temperature at which the first precipitation of wax occurred on cooling in a gasoline bath in an unsilvered Dewar cylinder. The temperature of the gasoline bath was controlled by an immersed copper coil, into which liquid air or liquid propane was introduced as needed from a Dewar flask. By changing the temperature of the bath very slowly, and holding at the cloud-point, the temperatures of complete wax miscibility can be determined easily to within less than 0.5° F. The data for the other solvents were obtained in a somewhat similar manner, except that measured quantities of solvent and wax were introduced into a test tube carrying a thermometer and coiled-wire stirrer through a cork stopper. It is realized that the wax-solubility data obtained in this manner are not necessarily comparable as regards numerical values with the results obtained on a different sample of wax by the same or a different method. The data are strictly comparable among themselves, however, and can be used to rate the different solvents according to their efficiencies as wax precipitants. To facilitate possible comparison, the physical characteristics of the sample of wax used are shown in Table 2.

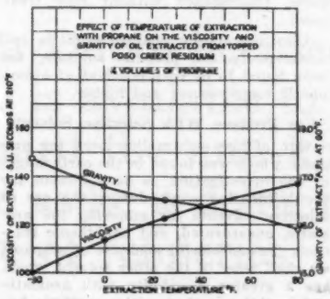

EFFECT OF TEMPERATURE OF EXTRACTION WITH PROPANE ON THE VISCOSITY AND GRAVITY OF OIL EXTRACTED FROM TOPPED POSO CREEK RESIDUUM
4 VOLUMES OF PROPANE
GRAVITY
VISCOSITY
VISCOSITY OF EXTRACT S.U. SECONDS AT 210°F.
GRAVITY OF EXTRACT A.P.I. AT 60°F.
EXTRACTION TEMPERATURE °F.

Fig. 5.—Effect of temperature of extractions

[2]P. W. Sullivan, Jr., W. J. McGill and A. French, Ind. Eng. Chem., 19, 1042, (1927).
[3]P. Weber and H. L. Dunlap, Ind. Eng. Chem., 20, 383, (1928).

TABLE 2—INSPECTION DATA ON PARAFFIN WAX USED IN SOLUBILITY EXPERIMENTS

Melting point, deg. F.	123
Gravity, deg. A.P.I. at 60° F. from test at 130° F.	43.5
Viscosity, Saybolt Universal:	
at 150° F.	47
at 210° F.	39
Molecular weight	369
Vacuum distillation at 1 mm. pressure:	
Initial boiling point	440° F.
10 per cent point	454° F.
20 per cent point	459° F.
30 per cent point	465° F.
40 per cent point	470° F.
50 per cent point	480° F.
60 per cent point	490° F.
70 per cent point	502° F.
80 per cent point	515° F.
90 per cent point	532° F.

It is seen from Figure 6 that the solubility of wax in the naphthas increases as the boiling range is lowered, but a reversal of this behavior occurs upon continuing to decrease the boiling point of the solvent; so that propane is a poorer solvent for wax, and, therefore, a more efficient wax precipitant, even than kerosene. The naphthas, the kerosene, and propane were all obtained from Santa Fe Springs crude.

Upon further examination of the wax-solubility curves in Figure 6, the very poor wax-precipitating efficiency of naphthenic solvents, illustrated by cyclohexene and methyl cyclohexane, as shown by higher wax solubilities in these solvents, is quite striking; and indicates that it is desirable to avoid the presence of at least the lower-molecular-weight naphthenes in the dewaxing medium. In other words, it would not be sufficient merely to employ low-boiling gasoline fractions, such as petroleum ethers from many crudes; but it is desirable from this standpoint to use the very low-boiling fractions, such as propane, which can be obtained in practically pure form free from contamination by naphthenes.

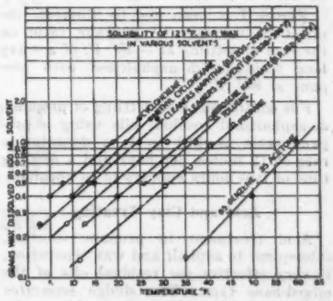


Fig. 6.—Solubility of wax in various solvents

The report of Bahlke, Giles and Adams[4] covers quite thoroughly a number of the most salient features of dewaxing with propane, particularly with respect to filtration. We may state that the results reported by the foregoing authors are in good agreement with our data. We shall, therefore, describe the dewaxing process only briefly—inserting some additional information that may be of interest.

Low Cold Test Products

In dewaxing with propane, refrigeration to about —40° F. is readily obtained by releasing the vapor at a controlled rate corresponding to lowering the temperature at the rate of 2° to 3° F. per minute. The low viscosity of the chilled mixture in combination with the favorable physical structure of the precipitated wax gives a readily filterable mixture with lubricating distillates, while

TABLE 3—DEWAXING BY FILTRATION FROM PROPANE SOLUTION AT —40° F.

Sample—		Gravity deg. A.P.I. at 60° F.	Pour-point (* F.)	Yield per cent by volume of stock	Viscosity, Saybolt Universal, at 210° F.	Volume of propane per volume of oil
Stock	De-asphaltized Kettleman Hills long residuum	19.8	90	...	98	..
Dewaxed	De-asphaltized Kettleman Hills long residuum	18.5	5	83.2	105	3.0
Stock	De-asphaltized Santa Fe Springs long residuum	20.1	90	...	93	..
Dewaxed	De-asphaltized Santa Fe Springs long residuum	19.2	0	84.0	102	3.0
Stock	De-asphaltized Santa Fe Springs cylinder stock	16.1	90	...	390	..
Dewaxed	De-asphaltized Santa Fe Springs cylinder stock	...	*40	85.5	450	3.0
Stock	Santa Fe Springs distillate	21.6	90	...	84	..
Dewaxed	Santa Fe Springs distillate	20.6	10	87	95	3.0
Stock	Hydrolube from Santa Fe Springs distillate	23.4	90	...	59	..
Dewaxed	Hydrolube from Santa Fe Springs distillate	21.3	15	78	61	‡3.0
Stock	Mid-Continent long residuum	20.0	90	...	...	..
Dewaxed	Mid-Continent long residuum	21.0	10	†79.9	120	3.5
Stock	Mid-Continent overhead cylinder stock raffinate	28.3	90	...	106	..
Dewaxed	Mid-Continent overhead cylinder stock raffinate	26.7	5	73.6	117	3.0
Stock	Pennsylvania cylinder stock	24.5	65	...	185	..
Dewaxed	Pennsylvania cylinder stock	24.2	15	‖81	181	‡3.0

*Viscosity pourpoint. †Yields of asphalt and wax were 5.4 and 14.7 per cent, respectively. ‡Wood-flour pre-coat, one-fourth inch. ‖Cake unwashed.

[4]Proc. A.P.I., 14M(3), 16, (1933).

the low specific gravity and low viscosity of liquid propane also facilitate the cold settling of the wax from heavy residual oils, and make possible a continuous cold-settling process. Filtration from propane solution is successfully carried out using ordinary No. 6 cotton canvas for the covering on the filter leaves, with or without the aid of a pre-coat of filter aid. Pourpoints as low as —25° F. have been obtained on distillate stocks, and pourpoints in the neighborhood of 0° F. can readily be obtained on a great many stocks.

Table 3 is presented to illustrate some of the stocks which have been dewaxed by filtration with propane. It should be pointed out that the volume ratio of propane can generally be reduced to as low as 1.5 volumes of propane for 1.0 volume of waxy oil containing 12 per cent to 18 per cent wax. The effect of changing the propane ratio on a particular stock is to increase the filtration rate of the propane solution; but the net filtration rate of dewaxed oil is, in general, not materially improved by increasing the propane ratio beyond about 2.0 volumes of propane to 1.0 volume of waxy stock.

As stated above, the dewaxing of heavy residual stocks is successfully accomplished by cold settling from propane solution. In this operation the minimum volume ratio of propane consistent with a sufficiently high settling rate to permit a continuous operation is rather critical, as is to be expected from consideration of specific-gravity and viscosity changes with increasing propane ratio—being in the neighborhood of 3.5 volumes of propane to 1.0 volume of waxy oil for the majority of the untreated residual stocks. The simultaneous precipitation of small amounts of asphaltic and high-molecular-weight resinous materials along with the wax is not objectionable, and actually appears to serve a useful purpose in aiding the agglomeration and settling characteristics of the precipitated wax particles.

Distillate oils are more difficult to cold settle, requiring an appreciably higher propane ratio; but their settling is aided by the addition of high-molecular-weight or colloidal materials which tend to be precipitated in a viscous or plastic state at the low propane temperatures.

Figure 7 is presented to illustrate the effect of varying the propane ratio on the rate of settling at —40° F. of a waxy long residuum de-asphaltized with propane at 80° F.

For continuous cold settling of propane-de-asphaltized residual oils using a propane ratio of 4.01 to 1, a decantation rate of 12 inches per hour and a settling time of two hours appears to be adequate.

Acid and Clay Treating

Acid treatment in propane solution, subsequent to asphalt and wax separation, is very effective for residual oils of the mixed-base type. The sludge separates cleanly, and is sufficiently mobile to be withdrawn from the bottom of the treating vessel—apparently due to a small amount of dissolved propane. Alkali washing, to remove organic acidity and any traces of suspended inorganic acidity, is easily accomplished in propane solution with practically no tendency toward emulsification with even high-speed agitation. An advantage in acid treating in propane solution is that the yield is increased and the consumption of acid reduced for the same color and carbon residue on the treated oil.

To illustrate the efficiency of acid treating in the presence of propane, Table 4 shows the results of comparable acid

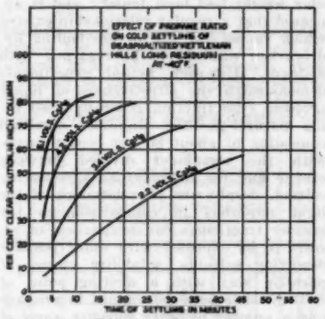

EFFECT OF PROPANE RATIO ON COLD SETTLING OF DEASPHALTIZED KETTLEMAN HILLS LONG RESIDUUM AT —40° F.
PER CENT CLEAR SOLUTION IN INCH COLUMN
TIME OF SETTLING IN MINUTES
3.5 VOLS. C3/VOL. OIL
2.5 VOLS. C3/VOL. OIL
1.5 VOLS. C3/VOL. OIL
2.0 VOLS. C3/VOL. OIL

Fig. 7.—Effect of propane ratio on cold settling

treatments on propane-de-asphaltized and dewaxed (continuous cold settling) Kettleman Hills long residuum followed by alkali and water washings, with and without the presence of propane. The marked improvement in yield and color is apparent from the table, and the appearance of the finished oil is decidedly in favor of the oil treated in the presence of propane, which shows an excellent green fluorescence without clay treatment.

Clay percolation, while the oil is still dissolved in the propane solution, has been found to be very efficient at atmospheric temperatures and higher.

Use Propane With Selective Solvents

One of the outstanding uses for propane, which was found in the early stages of the investigation, is as a diluent for the lubricating stock during the use of selective solvents for removing the aromatic, unsaturated, and naphthenic fractions. In considering such use of propane, we shall refer to the other solvent which has a greater miscibility with aromatic and naphthenic than with paraffinic hydrocarbons as the selective solvent; because lubricating stocks containing aromatic, naphthenic, and paraffinic fractions are readily miscible with propane, except for the asphaltic bodies discussed in the first part of this paper. Experience has shown that propane alone as a solvent cannot be used to make a separation between aromatic, unsaturated, and naphthenic lubricating fractions on the one hand, as compared with the paraffinic lubricating fractions on the other; but when propane is used in conjunction with a selective solvent which is practically insoluble in propane, a better control can generally be obtained over the behavior of the selective solvent. Among other things, the action of propane appears to be to suppress the solubility of the selective solvent in the raffinate phase, making for greater selectivity of the solvent, and at the same time to facilitate a better segregation of the colored and carbon-forming bodies into the extract phase. In other words, a very marked advantage of employing selective solvents in the presence of propane is an increased yield of raffinate of a given quality along with lower N.P.A. colors and carbon residues on the finished raffinate. The amount of the selective solvent required to give a raffinate of a definite quality may be slightly greater than when propane is not used, but the benefits of increased yield and saving on subsequent treatment are often more than sufficient to justify the use of propane with a suitable solvent.

As an example of the use of propane in combination with selective solvents to remove aromatic, unsaturated, and naph-

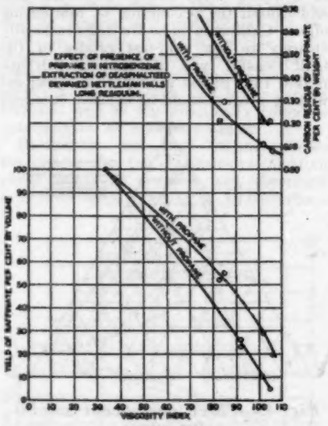

EFFECT OF PRESENCE OF PROPANE IN NITROBENZENE EXTRACTION OF DEASPHALTIZED DEWAXED KETTLEMAN HILLS LONG RESIDUUM.
WITH PROPANE
WITHOUT PROPANE
YIELD OF RAFFINATE PER CENT BY VOLUME
CARBON RESIDUE OF RAFFINATE PER CENT BY WEIGHT
VISCOSITY INDEX

Fig. 8.—Results using propane on Kettleman Hills long residuum

thenic fractions, Table 5 and Figure 8 have been constructed from data on nitrobenzene treatment of propane-de-asphaltized and propane-dewaxed Kettleman Hills long residuum. The first group of experiments shown in the table was performed without propane being present, using external refrigeration; whereas the second group was performed with the stock dissolved in propane and with internal refrigeration. All experiments shown were performed by the multiple-batch method, in which the stock is retreated with a fresh portion of solvent.

In comparing the results of such extraction experiments, comparison should be made between raffinates of the same viscosity index or viscosity-gravity constant. Thus, it is seen that for a viscosity index of 92 or a viscosity-gravity constant of 0.815, the yield of raffinate without propane was 24 per cent; whereas with propane the yield was 45 per cent of raffinate, with only about half the carbon residue and true color concentration. When the treatment is carried further, to give a viscosity index of 102 or a viscosity-gravity constant of 0.806 in both cases, the improvement in yield is even more pronounced—the yields being 11 per cent without propane and 29 per cent with propane—and the color and carbon residues are still distinctly better when propane is used. It should be pointed out that with continuous counter-current treatment the yields of raffinate of a given quality can be expected to be appreciably greater than in the multiple-batch experiments shown above, and at the same time the amounts of selective solvent required will be materially reduced.

It will be noted that the viscosities of the raffinates are lower when propane is used; but there is evidence to show that this is not due mainly to the removal of an excessive amount of high-molecular-weight fractions when propane is present, but rather to the removal of an excessive amount of low-molecular-weight fractions when propane is absent.

Function of Propane

A better understanding of the function of propane when used in conjunction with selective solvents is obtained from a consideration of the phase relationships in the extraction with a selective solvent which is practically immiscible with propane. With certain selective solvents such as cresol, we find that it is impossible to obtain a satisfactory phase separation at any reasonable temperature without the presence of propane when the stock shows a low degree of paraffinicity, as in the case of de-asphaltized, dewaxed Kettleman Hills long residuum of 0.878 viscosity-gravity constant. In other words, this particular stock and selective solvent are miscible in all proportions at the temperatures available from a practical standpoint; but it should be constantly borne in mind that whether a stock of a given average molecular weight will show complete miscibility with the selective solvent at the available temperatures is determined by the paraffinicity of the stock. If propane is added to a one-phase system consisting of such a selective solvent and stock in suitable proportions, we find by experiment that a point will be reached at which a separation of a second phase occurs, and that the amount of propane required to cause phase separation is dependent on the paraffinicity of the original stock. It is also found that the same quantity of propane is required in a batch extraction to give a satisfactory separation of phases, regardless of whether the stock is dissolved in propane before contacting with the solvent or whether the propane is added after mixing the oil and solvent—provided, of course, that the agitation is sufficient to insure equilibrium between phases in all cases. On account of the ready miscibility of propane with the lubricating stock and its immiscibility with the selective solvent, the propane solution of lubricating stock actually

(Continued on Page 20)

TABLE 4—ACID TREATMENT OF PROPANE DE-ASPHALTIZED AND DEWAXED KETTLEMAN HILLS LONG RESIDUUM WITH AND WITHOUT THE PRESENCE OF PROPANE AT 75° F.—15 LB. 66 PER CENT ACID PER BARREL OF STOCK, CAUSTIC-SODA AND WATER WASHED, BLOWN BRIGHT

Sample—	Volume per cent of propane	Yield volume (per cent)	Gravity deg. A.P.I. at 60° F.	Flash and fire-points C.O.C. (deg. F.)	Pour-point (deg. F.)	Carbon residue (per cent)	Color N.P.A.	Acid No.	Viscosity, Saybolt—Universal, at 100° F.	Viscosity, Saybolt—Universal, at 210° F.	Viscosity-gravity constant	Viscosity index
Stock	...	100	18.3	450 525	Fluid at 0	2.95	Green Opaque	0.4	2,350	107	0.878	44
Neutral oil	none	72.1	19.8	450 525	0	2.17	Opaque	0.15	2,130	102	0.866	42
Neutral oil	300	82.0	20.8	445 510	5	1.28	7½	0.06	1,665	92.5	0.861	47

TABLE 5—TREATMENT OF KETTLEMAN HILLS DEWAXED DE-ASPHALTIZED LONG RESIDUUM WITH NITROBENZENE WITH AND WITHOUT THE PRESENCE OF PROPANE

	Treatment			Tests on raffinate after 5 per cent Death Valley clay at 325° F.						
Sample—	Nitrobenzene (per cent by volume)	Propane (per cent by volume)	Temperature (deg. F.)	Yield volume (per cent)	Gravity deg. A.P.I.	Color N.P.A.	Carbon residue (per cent)	Viscosity, Saybolt—Universal, at 100° F.	Viscosity, Saybolt—Universal, at 210° F.	Viscosity-gravity constant	Viscosity index
Stock	...	...	..	100	18.6	Opaque	2.08	2,030	97	0.876	33
Raffinate No. 1	3×100	None	37	36.10	27.4	5½ +	0.36	774	75.5	0.815	92
Raffinate No. 2	3×100	None	37	23.30	27.4	5½ +	0.38	774	75.5	0.815	92
Raffinate No. 3	3×100	None	37	10.36	28.4	7	0.21	820	82	0.806	101
	3×100	None	68								
Raffinate No. 4	3×100	None	37	4.73	29.4	6½	0.21	1,040	95.5	0.796	101
	3×100	None	68								
Raffinate No. 1P	3×100	300	37	55.10	26.6	.....	0.29	670	69.5	0.827	85
Raffinate No. 2P	3×100	300	37	51.80	26.9	6½	0.21	662	68.5	0.828	83
Raffinate No. 3P	3×100	300	37	29.40	29.3	5	0.11	480	62	0.806	102
	3×100	(*)	68								
Raffinate No. 4P	3×100	300	37	19.2	29.8	5	0.08	466	63.5	0.802	104
	3×100	(*)	72								

*Experiment continued without removal or further addition of propane.

Call a cop!

Oxygen molecules (in the air) are sneak thieves that grab the anti-knock molecules in your cracked gasoline and turn them into gum—if they get a chance

Universal Liquid Inhibitor is the chemical policeman that foils them, that paralyzes the oxygen and hydrocarbon molecules and keeps them from ganging up

Whether you are a Dubbs licensee or not, this chemical cop is available to you He will faithfully guard the anti-knock value of your gasoline as he is doing now in more than a score of refineries

Put a little Universal Liquid Inhibitor in your gasoline (a gallon or less to 100 barrels) and you can forget your gum troubles

A giant in work and value—its cost is a trifle

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Illustration of Utility of Application of Data on Hydrocarbon Mixtures to Typical Problem

By W. K. LEWIS*

As a case in point, one may well consider the solubility of methane in various hydrocarbon liquids, data on which have been obtained by Frolich. The results are summarized in the following table.

TABLE 1

Solvent—	π atmospheres	$P = \frac{\pi y}{x}$ atmospheres	$f_p = \frac{yf\pi}{x}$
Butane	18	147	143
	47	188	177
	60	201	184
Pentane	45	183	172
	75	212	185
	100	219	191
Hexane	34	169	161
	70	192	173
	90	211	185
Octane	22	155	149
	81	191	171
	104	214	186
Cyclohexane	20	345	335
	24	342	328
	48	308	288
	60	298	275
	71	300	270
Benzene	20	571	555
	40	482	454
	65	445	377
	80	426	377
	112	442	375

Column 3 gives the value of P calculated from the Raoult's Law equation, $P = \pi y/x$. While there is quite a little fluctuation in the computed values, for the paraffin hydrocarbons the average value is 190 atmospheres with an average deviation of 18 atmospheres. Cyclohexane shows a higher average, 320 atmospheres, whereas benzene shows 475 atmospheres, indicating a distinct trend with decrease in hydrogen-carbon ratio of the solvent. Granting one knows the character of the solvent, this table would put one in a position to calculate the solubility by the use of these computed values of P. Furthermore, if values thus computed be plotted against the temperature they are found to constitute, for a given type of solvent, a smooth extrapolation of the vapor pressure curve for the liquid methane. This is true despite the variations in P for different solvents, because it is possible to extrapolate the vapor pressure curve itself to widely different values, without doing violence to it, provided the excess temperature above the critical is sufficient. However, because of the high pressures involved there can be no logical justification for the use of the Raoult's Law equation, but rather should one calculate and employ an extrapolated value of the fugacity, f_P, calculated from the equation, $f_P = yf\pi/x$. Knowing the temperature and total pressure, π, the value of $f\pi/\pi$ can be read from Figure 8, and $f\pi$ obtained by multiplying by π itself. This quantity thus calculated is shown in Column 4 of the table. Here again for the paraffin hydrocarbons, f_P has a value of 173 atm. $\pm$ 12 atmospheres. However, for benzene and cyclohexane the values are higher, as was the case with the corresponding values of P.

Objection may well be raised that these values are computed from data on the solubility of methane alone and apply to no other hydrocarbon. However, it is a well-known fact that at temperatures in the neighborhood of the critical the fugacities of the pure liquid hydrocarbons, expressed on a reduced basis, are all substantially the same function of the reduced temperature, although at low reduced temperatures marked divergencies develop. This being true below the critical temperature and the fugacities calculated from solubility data above the critical being smooth extrapolations of the fugacity curve below, one would expect the reduced fugacities to plot on a single curve common to all hydrocarbons. This has been done in Figure 10. It will be noted that the data for the four paraffin hydrocarbons plotted, methane to butane, inclusive, fall substantially on a straight line below the critical temperature and that the reduced fugacity of methane, calculated from its solubility in paraffin hydrocarbons at 25° C., the data for which are shown in Table 1, fall substantially on the extrapolation of that line. The data for the solubility in the paraffin is shown, not as a point, but as a line, the length of which indicates the maximum experimental deviation from the highest to the lowest of Frolich's points.[1] The probable error is of course less than half the length of this line. The data for cyclohexane and benzene are similarly indicated. It is seen that for these two hydrocarbons one would have to give the reduced fugacity curves some curvature above the critical temperature.

One is therefore justified in using Figure 10 for the calculation of the solubility of any hydrocarbon in a hydrocarbon solvent at temperatures above the critical of the dissolving constituent, provided one knows the character of the solvent, whether paraffinic, naphthenic or aromatic. However, an even better method of approach is to use the line of Figure 10, but, instead of measuring the average molecular weight of the solvent (which, in the case of production work, is the crude oil) by the usual methods, measure experimentally the solubility of a gaseous hydrocarbon, e.g., methane, in the oil, and from this solubility, calculate the molecular weight of the oil. In other words, the solution laws are not exact, but they can be rendered satisfactory for engineering purposes by various modifications. The two suggested above are, first, to correct the fugacity curve for the character of the hydrocarbon solvent or, alternatively, to use an extrapolated fugacity curve and correct the molecular weight of the solvent.

The nature of the problem will perhaps be clarified by further study of Figure 10. Clearly, that figure is equivalent to the extrapolation of the vapor pressure curve of the liquid to temperatures above the critical point. Can any physical significance be ascribed to such an extrapolation?

Dissolved Methane

As already pointed out, liquids usually mix with relatively little change in volume and in the case of hydrocarbons the change is less than the average. However, when gaseous methane dissolves in oil under ordinary conditions, it is certainly mixing with it and yet the mixing is accompanied by an enormous change (shrinkage) in total volume. However, if the methane prior to solution in the oil were compressed sufficiently, it could be brought to a volume so low that solution in the oil would occur without change in total volume. In this sense the compressed methane would act as a liquid from the point of view of perfect solutions. Therefore, despite the fact that the methane is above its critical temperature, it is legitimate to call it a liquid. In other words, a gas dissolving in a liquid solvent dissolves, not as a gas, but in a highly condensed condition that is truly described as a liquid state.

In this sense, granting the operation of the solution laws, the extrapolated vapor pressure, or rather the total pressure corresponding to the extrapolated fugacity, is the pressure under which gaseous methane will possess a density such that it will mix with the liquid hydrocarbon solute without change in total volume. In other words, under this pressure, from the point of view of solution, the methane, despite the fact that it is above its critical temperature, is in the liquid state. By the use of Figure 4 it is easily possible to calculate the density of methane at the pressure corresponding to the extrapolated fugacities

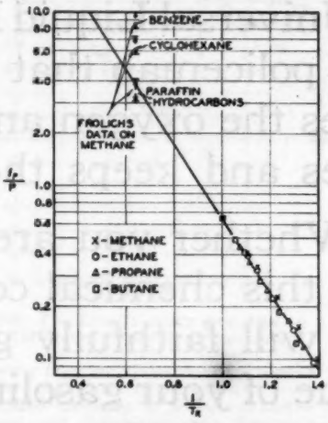


Fig. 10

of Figure 10. Doctor Lacey has measured the increase in volume of gasoline and iso-pentane on solution of methane in them and calculated the corresponding density of the methane, obtaining for iso-pentane 0.0027 ccm. of methane in the dissolved state for each ccm. of methane gas at atmospheric pressure and 30° C., corresponding to a specific gravity of the dissolved methane of 0.239. The corresponding figures for gasoline are .00218 ccm. of methane in the dissolved state for each ccm. of methane gas, corresponding to a specific gravity of dissolved methane of 0.295. The Bureau of Mines has published similar data on solubility of natural gas in oil. The densities calculated from their data are 0.384 for Bartlesville crude, 0.366 for Inglewood crude and 0.479 for Seminole.

The natural gas contained 14 per cent of ethane and higher; obviously higher densities would be expected for this gas than for pure methane. Using the line of Figure 10, the corresponding density of methane is 0.164. Using the curve through the cyclohexane data, representing an extrapolation of the points below the critical temperatures, gives a figure of 0.24 and a similar computation based on the data on benzene of Frolich gives a figure of 0.28. It is seen that the density of methane computed from Frolich's solubility corresponds surprisingly closely with the direct measurements of liquid volume available.

This behavior of dissolving gases can be approached from another angle. Thus, it is a well recognized rule that the heat of solution of a hydrogen vapor dissolving in a liquid solvent is practically identical numerically with the heat of vaporization of the dissolving constituent at the same temperature. However, at the critical temperature heat of vaporization becomes zero and above the critical temperature in the usual sense of the word the concept breaks down. None the less, it is a well-known fact that even far above the critical temperature dissolving gases do possess heats of solution. In fact, the heat of solution of a gas or vapor is the negative of the heat of expansion of the component from the liquid to the vapor state. This heat of expansion is the change of internal energy given by Figure 7, plus the change of the pressure-volume product. In this sense one can describe the heat of solution of a gas in a liquid, at temperatures above the critical of the dissolving component as the negative isothermal heat of vaporization of the gas compressed to its liquid density, when expanded to the conditions corresponding to the lower pressure at which it is dissolved.

Attention should be called to the fact that at the moderately high pressures and low temperatures encountered in production work, the amount of a given constituent present in the gas phase decreases extraordinarily rapidly as the boiling point of that constituent rises. Under usual conditions the amount of butane in the gas is negligible. Obviously as the pressure falls higher boiling constituents will enter the gas in progressively increasing amounts but the quantities are computed by the same technique. The conditions of temperature and pressure with which the production engineer is dealing make his problems from this angle far simpler than those of his fellow refinery engineers.

Illustration of Method

To illustrate the utility of this method of approach in the attack of production problems, let it be assumed that a well is producing a crude of 39 degrees A.P.I., the character of which is indicated by the true boiling point curve shown in Figure 11. The average molecular weight of this oil is found to be 180. These data apply to a sample as it was separated at the top of the well from the gases at substantially atmospheric pressure at 79° F. The well is producing with a gas-oil ratio of 613 cu. ft. per barrel, the gas volume being reduced to 30 inches of mercury and 60° F. The analysis of the gas as it was separated from the oil is 80.9 per cent methane, 10.1 per cent ethane, 6.8 per cent propane and 2.2 per cent butane. The composition of the oil in weight per cents is methane 0.045, ethane 0.05, propane 0.147, butane 0.290, pentane and higher 99.468. Let it be required to calculate the volume of gas plus oil flowing through the face of the sand at the bottom of the well, first, on the assumption that the temperature at the bottom of the well is 140° F., and the pressure at that point is 735 pounds gauge, and, second, that the temperature is 80° F. and the pressure 735 pounds gauge.

Consider for the amount 1 bbl. of this oil plus the gas associated with it. The oil weighs $42 \times 8.33 \times 0.83 = 290$ pounds. Since the experimentally determined molecular weight of the oil was 180, 1 bbl. of the oil is $290/180 = 1.615$ lb. mols. Associated with the oil is 613 cu. ft. of gas. Since 1 lb. mol gas occupies 378 cu. ft. at 30 in. of mercury and 60° F., the mols of gas are $613/378 = 1.62$. It will be more convenient to consider, not a barrel of oil, but 1 lb. mol of the combined oil and gas, 1 bbl. of oil corresponds to $1.62 + 1.615$ mols of gas plus oil, or 3.235 mols total. Hence, in each mol of the mixture of oil and

*Part 1 of this paper published in October 19 and Part 2 in October 26 issue of The Oil and Gas Journal.

[1]The deviations are partly due to a quite definite trend of the calculated values of f_p with the pressure, the tendency being for it to rise with the pressure for the paraffin hydrocarbons and fall in the case of cyclic compounds. Were the solubilities in different members of a given group of compounds compared at the same total pressures, the deviations would be much less.

★

REPUBLIC

ELECTRIC WELD TUBING IN *the World's Deepest* WELL

THE North Kettleman Oil and Gas Company drilled the Lillis & Welsh No. 1 well at North Dome in Kettleman Hills, Calif., to 10,946 feet—the world's deepest well.

A string of Republic Electric Weld Upset Tubing 8,300 feet long was used to swab the well. When the tubing was pulled the collars were found to be as tight as when the string was made up, in spite of the exceptional depth and the extraordinarily high stresses imposed. Again—this well was swabbed to a depth of 7,500 feet with only two sets of rubbers—and the second set was still in serviceable condition at the completion of the work. Previously, with other tubing in the same well, seven sets of rubbers had been required to do the same work.

All of which proves several things about Republic Electric Weld Tubing—that the steel and the electric weld are 100% and can take punishment—that the roundness, uniformity of diameter and smooth inside surface are positive factors making for maximum economy in use.

Republic Electric Weld Pipe is available in Tubing, Casing and Line Pipe. Catalog 210-B will bring you the complete story of this better product that is continually making new records in the field. Write for a copy today.

REPUBLIC

ELECTRIC WELD

LINE PIPE • CASING • TUBING

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES: YOUNGSTOWN, OHIO

gas there is 0.501 mols of gas and 0.499 mols of oil.

Since the analysis of the oil is given on a weight per cent basis, it will be desirable once again to shift gears and consider 100 pounds of the oil. This 100 pounds constitutes 100/180=0.556 lbs. mols. The 100 pounds contains .045 pound of methane which constitutes .045/16 lbs. mols of methane. Consequently, the mol fraction of methane in the oil is this figure divided by 0.556 or 0.005. Since 1 mol of the mixture of oil and gas contains 0.499 mols of oil, multiplying the molal fraction of methane in the oil by this last figure gives the actual pound mols of methane in the oil. Table 2 summarizes the results of similar calculations for the various components.

TABLE 2

	Mols in gas	Mols in oil	Total mols
C_1	0.405	0.0025	0.407
C_2	0.051	0.0015	0.053
C_3	0.034	0.0020	0.037
C_4	0.011	0.0045	0.015
C_5 and higher		0.4875	0.488
	0.501	0.4990	1.000

The following table summarizes the preliminary computation for conditions of 140° F. and 735 pounds pressure; the steps in calculation should be obvious from the preceding discussion. All pressures are given in pounds per square inch.

TABLE 3

Comp.—	T_c	P_c	T_R	P_R	π_R	f_P/P	f_P	f_π/π	f_π	a
C_1	191	674	1.74	....	1.11	*5.3	3,560	†0.94	704	5.06
C_2	305	718	1.09	....	1.04	*0.94	675	†0.74	555	1.22
C_3	369	632	0.903	0.488	1.18	†0.76	234	‡0.49	369	0.78
C_4	426	528	0.782	0.196	1.41	†0.83	85	‡0.34	255	0.33

*Read from Figure 10 as f_P/P_c.
†Read from Figure 8 as f_π/P. (Can also be obtained from Figure 10.)
‡Extrapolation of Figure 8.

TABLE 4
Assume N = .316

Comp.—	n'	n	μ	V (cu. ft.)	Comp. of gas
C_1	0.407	.285	0.97	2.28	90.24%
C_2	0.053	.019	0.83	.10	5.98%
C_3	0.037	.010	0.1	.01	3.15%
C_4	0.015	.002	0	0	0.63%
		.316		2.49	100.00%

Still focusing attention on 1 pound mol of combined gas and oil flowing from the well, but realizing that this mixture will be partially vaporized at 140° F. and 735 pounds pressure, despite the fact that the amount of vaporization will be far less than that existing at the top of the well, call the total mols vaporized at the face of the sand N, the mols of any one component vaporized under those conditions, n, and the total mols of that component existing in the total mixture n'. The component to which one is referring in any given instance will be indicated by a subscript; n_1 is the mols of methane in 1 mol of total mixture existing in the form of vapor under the conditions in question. Clearly, n' is for each component the figure found in the last column of Table 2. Since one is considering 1 mol of total mixture, of which N mols are in vapor form, it follows by difference that 1 — N must be the total mols of liquid. Similarly, for each component n' — n is the mols of that component in the liquid state.

Trial and Error Method

Since one has N mols of vapor containing n mols of a given constituent, it is clear that the mol fraction, y, of that constituent in the vapor is y=n/N. Similarly, the mol fraction of the same constituent in the liquid is x=(n' — n)/(1 — N). Since from the solution laws, $xf_P=yf_\pi$, it follows that

$$\frac{f_P}{f_\pi}=\frac{y}{x}=\frac{n}{n'-n}\left(\frac{1-n}{N}\right)=\mu$$

The ratio, f_P/f_π, is conveniently designated μ because this ratio occurs repeatedly in the process of computation.

The last equation of the preceding paragraph is soluble by trial and error. If one will guess the total amount of vapor existing in the mixture, N, then for each component, n becomes the only unknown in the equation and can, therefore, be immediately computed for each. Clearly, the sum of the individual values of n must add up to the value of N. If they do not so add up, the value of N assumed was wrong and a new value must be taken until the required check is obtained. The technique of computation will be clear from the second column of Table 4 which represents the last step in the process of trial and error when the assumed value of N is correct. However, after a little experience the estimation of N becomes quite rapid, since as soon as one has calculated the check (or lack of it) for a couple of values of N, one can readily extrapolate to almost exactly the value required in the equation.

Since Table 4 gives the correct value of the total amount of vapor and the amount of each constituent, by the use of the gas law one is immediately in a position to compute the total volume. One needs only to know the volume which each of the constituents would occupy at the same temperature and total pressure computed from the gas laws with the μ correction. Since T_P and π_R are available for each constituent in Table 3, the value of μ can be read directly from Figure 4, and the volume corresponding thereto calculated from the corrected gas law data. This has been done in the third and fourth columns of Table 4. In other words, each mol of oil plus gas flowing from the well contains 0.316 mols in the vapor state and the volume of this vapor is 2.49 cubic feet.

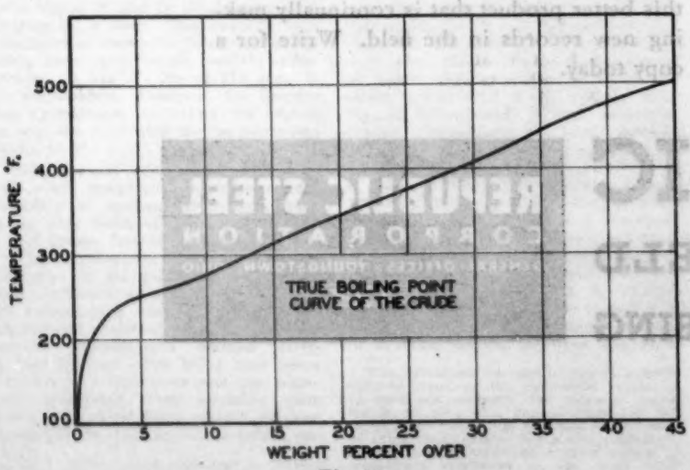


Fig. 11

Dissolved Constituents

The oil at the bottom clearly consists of the oil from the casing increased by the constituents of the gas dissolved in it because of the higher pressure at the bottom of the well. The amount of these dissolving constituents is computed in the following self-explanatory table.

TABLE 5

	M.W.	Mols	Pounds
Oil at top	180	0.492	89.8
C_3	16	0.120	1.9
C_3	30	0.032	1.0
C_3	44	0.024	1.1
C_4	58	0.009	0.5
			94.3

One could compute the volume of each dissolving constituent and determine the total volume of the mixture by adding up that of the component but it is probably sufficiently accurate to estimate the decrease in specific gravity of the oil. Calling it 0.8, its volume at the bottom of the well is clearly 94.3/(62.4)(0.8)= 1.89 cubic feet. Consequently, the total volume of oil plus gas is 4.38 cubic feet. It is interesting to note that under these conditions the volume of the gas is only 31.7 per cent greater than that of the oil, despite the fact that on a molal basis over 31 per cent of the total mixture is in gaseous form. Had this 31 per cent existed in gaseous form at atmospheric pressure and 140° F., the volume of the gas would be over 70 times that of the oil.

The following tables repeat the computation for the same pressure with a lower temperature of 80°. The significant fact in the result is that this drop in temperature of only 60° F. has reduced the volume of the gas about 40 per cent.

It is clear that by such a technique one can calculate the volume of both gas and oil in the crude flowing from a well as a function of the pressure at the point in the sand in question, provided one knows the sand temperature. Certainly, this information is essential in any adequate analysis of the mechanism of flow through the sand in all those important cases in which both liquid and gaseous phase are present. However, it ought to be emphasized that the computation method here discussed assumes no serious segregation of oil from the gas in the sand itself but that the two are sufficiently intimately mixed to maintain substantial equilibrium.

The following table summarizes the preliminary computation for conditions of 80° F. and 735 pounds pressure.

TABLE 6

Comp.—	T_R	P_R	π_R	f_P/P	f_P	f_π/π	f_π	a
C_1	1.57	....	1.11	*3.9	2,620	0.95	712	3.68
C_2	0.952	....	1.04	*0.6	430	0.62	465	.925
C_3	0.813	0.228	1.18	†0.36	124	‡0.36	270	.46
C_4	0.703	0.075	1.41	†0.92	36	‡0.27	202	.18

*Read from Figure 10 as f_P/P_c.
†Read from Figure 8 as f_P/P. (Can also be obtained from Figure 10.)
‡Extrapolated from Figure 8.

TABLE 7
Assume N = 0.228

Comp.—	n'	n	μ	V	Comp. of gas
C_1	0.407	0.212	0.93	1.52	92.36
C_2	0.0503	0.011	0.2	.02	4.82
C_3	0.037	0.004	0.1	0	1.76
C_4	0.015	0.001	0	0	0.44
		.228		1.54	100.00

TABLE 8

Comp.—	Mol. wts.	Mols	Pounds
C_2	16	0.193	3.1
C_3	30	0.049	1.5
C_3	44	0.030	1.3
C_4	58	0.0116	0.6
Oil at top	180	0.489	89.9
		0.772	96.9

Estimating the specific gravity of the oil as 0.79, the total volume of the oil plus dissolved gas = 96.1/(62.4)(0.79)= 1.95 cubic feet. This makes a total volume of oil plus undissolved gas or 3.49 cubic feet.

TO DRILL IN UTAH

Negotiations have been completed by J. W. Weightman, vice president and geologist of the American Oil Corp. of California, whereby the Ramsey Petroleum Corp., of Oklahoma, will drill a test well on the Last Chance anticline, Emery County, East Central Utah. The well is located 648 feet north of the south line and 263 feet east of the west line of the NE SW Section 18-26s-7e, Salt Lake Meridian.

Use of Propane for the Dewaxing of Lubricants

(Continued from Page 16)

constitutes the stock being subjected to extraction by the selective solvent.

In the foregoing example, in which no phase separation can be obtained with the selective solvent on the original stock, it may be considered that one function of propane added is to increase the paraffinicity of the combined stock until a satisfactory separation of phases is obtained; but a peculiar advantage of propane as compared to other higher-molecular-weight paraffinic diluents which might be added, or re-cycled, appears to reside in its extremely low solvent power for certain selective solvents. This particular feature of propane reduces markedly the concentration of the selective solvent in the stock or raffinate phase, and thereby increases the effective selectivity of the solvent as regards segregation into the extract phase of only the materials which are most readily soluble in the selective solvent, viz., the most aromatic and naphthenic fractions responsible for dark colors and high carbon residues. For example, the concentration of nitrobenzene was determined in the raffinate phases as they were taken from the extraction apparatus in the experiments shown in Table 5. Without propane the concentration of nitrobenzene in the raffinate phase was about 18 per cent to 20 per cent by volume; whereas in the presence of propane the corresponding value was approximately 8 per cent.

From the standpoint of practical operation, the low viscosity and low specific gravity of the raffinate phase (propane phase) aids materially in obtaining adequate contact and equilibrium between phases, and in the coalescence of the respective phases before separating. Also in the case of solvents requiring a low temperature for satisfactory operation, as for example a mixture of cresols, refrigeration by means of propane is readily accomplished by admixing the stock with propane and refrigerating by evaporation of a portion of the propane—with separation of any precipitated asphaltic phase before introducing the stock into the countercurrent treating system. The solvent is pre-cooled in a similar manner if desired.

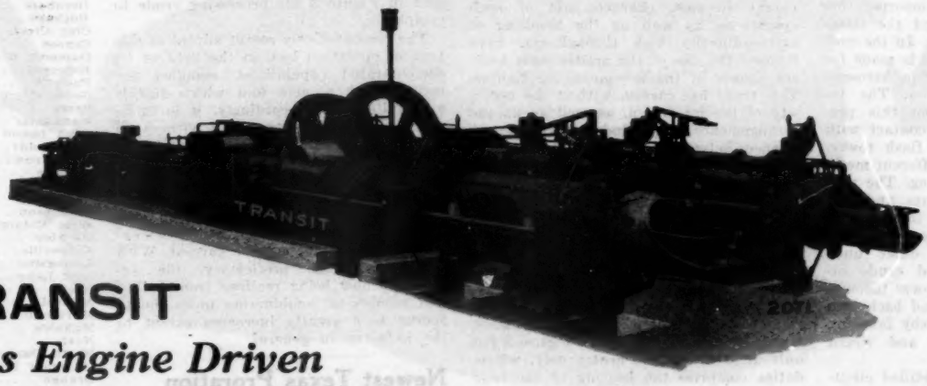
The solvent treatment of waxy stocks in propane solution may be accomplished at temperatures either above or below that at which wax begins to precipitate in the propane solution, but it is possible with a number of solvents to operate at a sufficiently high temperature to keep all of the wax in solution during the solvent treatment.

The proportion of propane employed in solvent extraction is often insufficient, with residual oils of low asphalt content, such as the better grades of Mid-Continent oils, to cause precipitation of a sufficient quantity of an asphalt phase to justify removal by settling prior to solvent treatment; and the propane solution of such oils may be introduced directly into the solvent-treating system. With some of the more selective and effective solvents, the asphalt is completely

TRANSIT helps refiners to reduce costs

BY enabling them to reduce the cost of power; and at the same time guaranteeing them the utmost in dependable pump performance for the most exacting of services—that of

PUMPING HOT OIL



TRANSIT
Gas Engine Driven
HOT OIL PUMPS

"IT DOES SEEM TO ME that very few refiners will install steam driven pumps to operate a Cracking Plant, when the Cracking Plant itself provides gas which can be used for operating gas engine driven pumps at much less cost than by using steam." So says Mr. L. D. Fulton, Superintendent of The Pennzoil Company, one of the largest refining companies in Pennsylvania.

The illustration shows the TRANSIT Gas Engine Driven Hot Oil Pump at the refinery of The Pennzoil Company, Oil City, Pennsylvania. The Gas Engine is a TRANSIT 17x24" Twin tandem, four-cycle, single acting engine operating on refinery gas. It is rated at 310 H.P.

The engine is direct connected through backgearing to a TRANSIT 5x24" Horizontal Duplex Plunger Hot Oil Pump with forged steel fluid cylinders and extra deep stuffing boxes.

The pump has a capacity of 350 GPM of hot oil at its normal rating of 45½ RPM. It is equipped with 3⅜" diameter reversible valves and designed to operate on 600°F. oil.

NATIONAL TRANSIT PUMP AND MACHINE CO.
OIL CITY, PENNSYLVANIA

NEW YORK . CHICAGO . CLEVELAND . PITTSBURGH . LOS ANGELES . HOUSTON . TULSA

removed into the extract phase, and a raffinate of satisfactory color is obtained without subsequent acid treatment. The finishing treatment in such cases would usually consist of a hot contact-clay treatment employing 5 per cent to 10 per cent of decolorizing clay.

Acknowledgment

The authors wish to express their appreciation of the helpful suggestions and enthusiastic support received from R. E. Haylett and D. R. Merrill in the course of the research reported in this paper, and to acknowledge the assistance of the many laboratory co-workers, particularly R. C. Pollock, M. L. Wade and V. N. Jenkins.

Combination Cracking Unit Has Wide Variety of Duties

(Continued from Page 11)

quantities of crude to be accommodated without excessive size, which is reflected in outstanding degree in the processing of 20,000 bbls. of crude to completion, daily, by one of these units. The advantage realized through the elimination of handling of intermediate products is obvious.

From the diagrams it will be noted that the crude oil feed, after preheating with waste heat, is flashed to separate light and heavy straightrun naphtha cuts, the former being ready for incorporation in the finished gasoline, and the latter to be subjected to reforming. In the unit shown in Figure 3, provision is made for the additional separation of a kerosene cut in the crude distillation. The reduced crude remaining from this predistillation is preheated by contact with hot vapors in the fuel oil flash tower, but Figures 2 and 3 show different methods of its subsequent handling. The unit in Figure 2 further preheats and distills the reduced crude, by introduction to the high pressure evaporator prior to primary cracking. The other unit, however, passes the reduced crude direct from the fuel oil flash tower through the primary cracking coil, and back into the fuel oil flash tower, thereby favoring segregation of the cracked and virgin stocks.

These units employ a redistilled circulation system, for the vapor phase cracking, similar to the one observed in the installation in Figure 1. In both cases the circulating stock is carefully controlled in boiling range for suitability for the vapor phase temperature employed, and it is made up of fractions distilling over into the bubble tower, from the evaporator, along with an amount of similar quality condensate from the fuel oil flashing operation. In passing through the vapor phase cracking coil, temperatures upward of 950° F. are attained, and the emerging stream is, in one case, soaked in an insulated vessel.

The naphtha reforming operation is applied to the heavy straightrun naphtha cut by digesting this material in a coil at temperatures over 1,000° F., and under pressures of 500 pounds, and higher — the total products from this heat treatment being discharged into the high pressure evaporator, and handled subsequently with the vapor phase cracked vapors. The unit in Figure 3 is provided with a withdrawal point, for heavy naphtha, on the cracking fractionator, which permits inclusion of this stock with the feed to the reforming coil. The total vapors leaving the cracking system comprise cracked naphtha produced in the primary cracking, vapor phase cracking and reforming, and can be subjected advantageously to Gray treating, in the vapor phase, as is shown in Figure 3. The light straightrun naphtha not requiring such treatment is segregated, and combined with the heavier product after treating.

Heaters

The heating facilities, employed in these more complex combination operations, present numerous unusual features. The heating of the three or more individual streams, characteristic of such operations, as well as the handling of extraordinarily high throughputs, have favored the use of the multistream heaters shown in the accompanying figures. This trend has carried with it the necessity of precise design, as well as unique arrangements to preclude limiting interference between individual streams, or the necessity for large overdesign in securing a practical degree of flexibility.

Figure 2 will be seen to present an individual heater for primary cracking, and another for naphtha reforming and vapor phase cracking together. In the case of the latter, the two radiant sections serve similar functions in vapor phase cracking parallel streams. The vapor phase feed to this heater amounts to more than 1,300 bbls. per hour. In Figure 3 the unit utilizes a single heater only, whose duties comprise the heating of the four separate streams required by the operation. It will be observed that the separate radiant sections serve separate functions, while still others are served by the convection zone.

The performance of these latter types of combination unit, since they have been put into service, has been fully in accordance with their theorectical advantages.

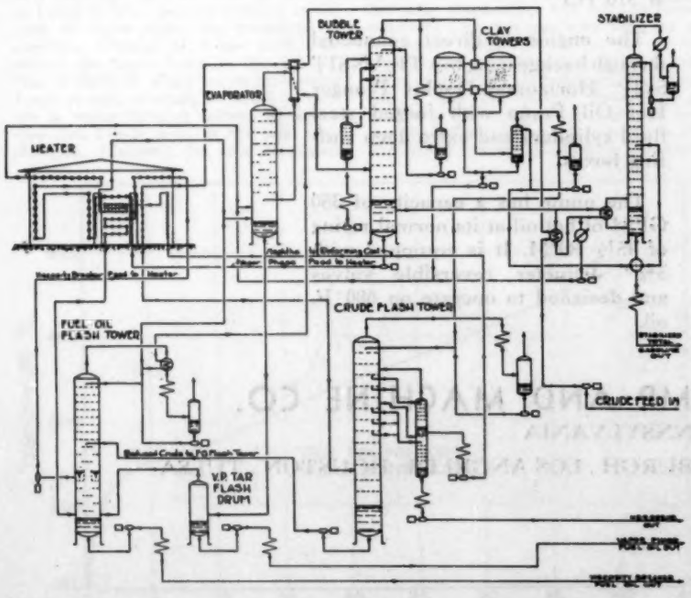


Fig. 3.—A combination unit for crude feed, producing ultimate yields of products direct and employing a single heater and a cycle somewhat modified from that in Fig. 2

The following representative data are typical of the results secured on the running of a 36-37° A.P.I. Mid-Continent crude through one of the larger units above described and they illustrate the results obtainable commercially with such an operation.

Yields

Straightrun light gasoline	15.7	
Cracked gasoline, stabilized	50.5	
Total gasoline		66.2
Fuel oil	24.8	
Fuel gas and loss	9.0	
Total	100.0	

Fuel Consumption

Total for unit, per cent of crude charge 5.10

Products

	Composite gasoline	Fuel oil
Gravity A.P.I.	61.0	9.4
Viscosity at 122 Furol	...	175
B.S.&W.	...	.54
Octane No. CFR-M	70	...
I.B.P.	84	...
20 per cent	164	...
50 per cent	264	...
90 per cent	382	...
E.P.	401	...
Per cent rec.	96.0	...

Outlook for Future

The prospects for the future application of the combination operation may be perceived in the erection now under way of a unit for crude oil feed whose capacity will far exceed those of existing self-contained systems for similar duties. This installation will accommodate 32,000 bbls. of crude daily. It will embody substantially the same functions as those of the unit in Figure 3 for processing crude to completion.

The comparatively recent advent of this type of operation has, in the light of its demonstrated capabilities, supplied the refiner with a new tool which fulfills a definite need. Accordingly, it is to be expected that the future will witness an increased tendency toward establishing the main cracking operation as the basis around which all heat treating and distillation operations will be closely centered. The new 32,000-bbl. unit for complete crude processing illustrates the extent to which this may be carried. With continued design proficiency, the advantages now being realized from a limited number of combination units should accrue to a greatly increased extent to the industry in general.

Newest Texas Proration Order Reduces Allowable

(Continued from Page 13)

be distributed to the various fields therein as follows:

	Bbls.
Andrews County	275
Big Lake	14,000
Church and Fields Church McElroy McCamey	14,606
Howard-Glasscock	13,500
Winkler County	17,500
Ector-Penn	5,550
Yates	42,500
Loving County	1,840
Ward County	5,250
Irion	16
Toborg	985
South Cowden	287
North Cowden	1,000
Mitchell, Scurry and East Howard	1,375
Pecos Valley	266
Skelly-Grayson	99
Taylor-Link	560
World	680
Phillips-Pryor	30

7. Rule 2 of Division 8 of that portion of said order which governs the Southwest Texas district is amended to read as follows:

"Rule 2. Not more than 45,487 bbls. of crude oil shall be produced from said district during any day of the effective period of this order and the same shall be distributed to all of the fields in said district as follows:

	Bbls.
North Government Wells	8,640
South Government Wells	1,360
Old Government Wells	225
Sarnosa	1,000
Salt Flat	4,810
Darst Creek	9,630
Hilbig	800
Albercas	139
Aviators	443
Callihan	70
Carolina-Texas	106
Charco-Redondo	6
Cole	182
Cuellar	198
Driscoll	77
Escobas	1,880
Jacobs	260
Kohler	141
Laurel	570
Los Olmos	417
Mirando City	578
Mirando Valley	29
Moca	550
Randado	402
Rio Grande City	70
Roma	10
Saxet	1,975
West Cole	670
Branyon	28
Buchanan	24
Chapman Abbott	680
Cooksey	34
Dale	440
Dunlap	30
Eckert	432
Henne Wich Farriss	6
Larremore	48
Luling	6,656
Lytton Springs	528
Manford	57
Minerva Rockdale	260
Somerset	806
Taylor Ina	20
Thrall	46
Yoast	82
Yturri-Southton	81

8. Rule 2, Section A, Division 9 of that portion of said order governing the Gulf Coast district is amended as follows:

"Rule 2. Not more than 144,029 bbls. of oil per day shall be produced from said fields of said district during any day of the effective period of this order which shall be distributed to said field as follows:

	Bbls.
Allen	17
Agua Dulce	27
Arioia	600
Barbers Hill	15,750
Batson	454
Big Creek	1,055
Blue Ridge	622
Boling	287
Brenham	15
Buckeye	488
Clay Creek	716
Conroe	58,000
Damond Mound	541
Esperson	1,047
Fannett	524
Goose Creek	2,632
Greta	7,500
Hankamar	1,040
High Island	6,000
Hull (old)	3,665
Hull (new)	2,500
Humble	3,475
Keeran	221
Spindletop	2,000
Thompson	10,000
West Columbia	2,580
Hockley	20
Kingsville	50
Livingston	1,950
Lost Lake	150
Lucas	51
Manvel	1,880
Markham	665
Mykawa	237
Nash	20
North Dayton	119
O'Connor McFadden	150
Orange	590
Orchard	1,160
Pettus	2,365
Pierce Junction	3,500
Pledger	32
Port Neches	885
Raccoon Bend	3,325
Refugio-Fox	*4,050
Rockland	10
Saratoga	797
Slick	24
Sour Lake	938
South Liberty	413
Sugarland	5,550
Tomball	1,200
White Point	32

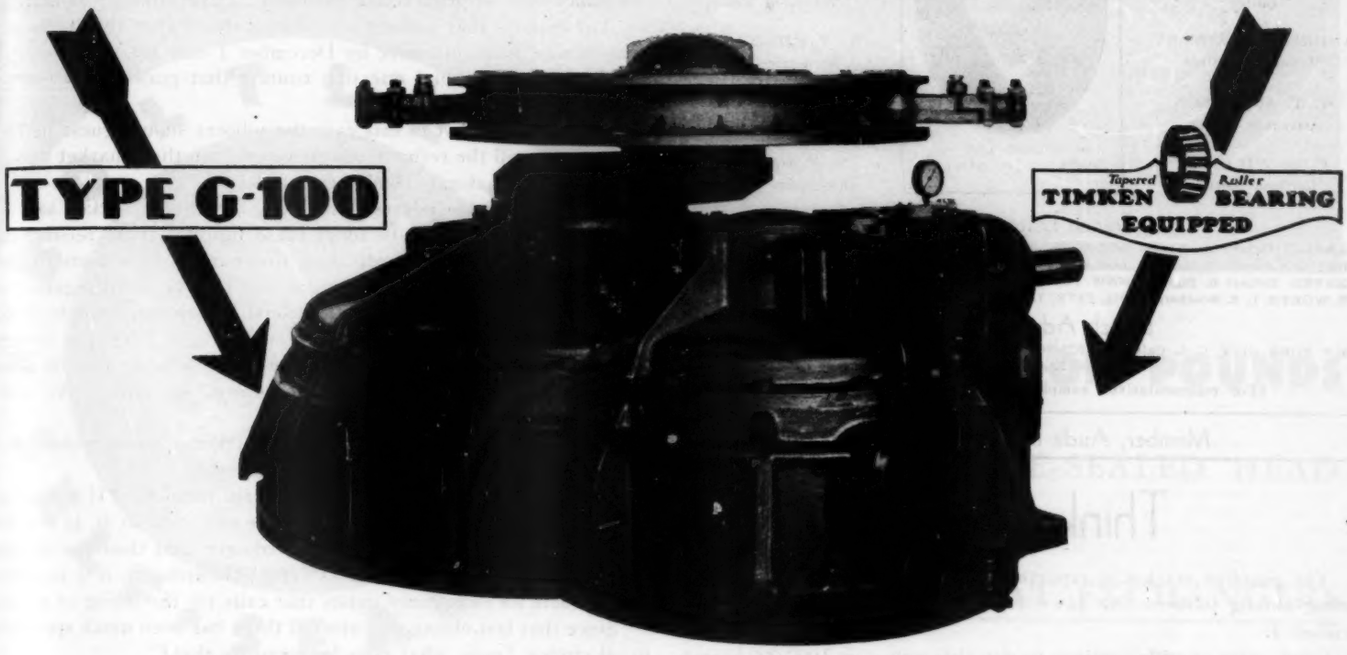
*No well in Refugio-Fox area shall be permitted to produce in excess of 250 bbls. of oil daily."

C. L. DITTMAN DIES

HOUSTON, Tex., Oct. 28.—C. L. Dittman, 43 years old, drilling contractor and oil producer, whose operations have extended from the Pennsylvania fields through Ohio, Oklahoma, Texas and New Mexico, died in Pecos, Tex., October 20, and was buried at Fort Stockton, October 22. He was familiarly known by his friends as the largest drilling contractor in the world, being 6 feet 4½ inches tall and weighing 440 pounds.

Mr. Dittman had worked around oil fields since he was 15 years old, starting in Pennsylvania, his native state, where he was born at Franklin in 1890. He had a number of famous discovery and extension wells to his credit, among which was the original townsite well of Ranger, and had operated strings of tools in nearly all the boom fields. From 1921 he was associated with Floyd Scott, Fort Worth geologist and operator and during the McCamey, Yates, Ward County and Hobbs, New Mexico, booms, beginning in 1925, these operators drilled approximately 175 wells, operating nine strings of tools. For the past year he has been inactive, making his home at Fort Stockton and Pecos. For a number of years he lived at Mineral Wells, where he did considerable drilling.

NATIONAL GEARED POWER



Correct design, combined with the best in material and workmanship, produces in the National Type G-100 Power an efficient machine that will operate for years with minimum expense.

In this Power gear deflection is prevented by the thick-walled, heavily ribbed, semi-steel housing. Filtered lubrication is provided to bearings and gears by a geared oil pump. The gearing is proportioned to afford years of service under the heavy loads of a central power installation.

The forged crankshaft, the heat-treated alloy helical gears, the carburized Gleason spiral bevel gear, and the Timken bearings indicate the high quality of the materials in this unit.

The Type G-100 is the latest addition to the line of National Pumping Powers, whose dependability has been established by many years of service in thousands of installations.

THE
NATIONAL SUPPLY
COMPANIES

THE OIL AND GAS JOURNAL

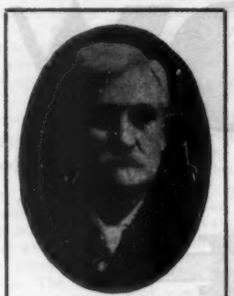
PRODUCING REFINING NATURAL GASOLINE PIPELINE MARKETING

Published Weekly by

THE PETROLEUM PUBLISHING COMPANY

114-16 West Second Street, Tulsa, Oklahoma

P. C. LAUINGER, President
JOHN M. EGAN, General Manager
JAMES McINTYRE, Editor
ANDREW M. ROWLEY, Managing Editor
W. T. ANDERSON, Associate Editor
C. O. WILLSON, Refinery Editor



Established 1910 by PATRICK C. BOYLE

E. KLAPPENBACH, Advertising Manager
L. G. E. BIGNELL, Petroleum Engr. Editor
C. K. FRANCIS, Ph. D., Technical Editor
W. T. ZIEGENHAIN, Associate Editor
THOMAS F. SMILEY, Associate Editor
M. F. BALDWIN, Circulation Manager

Branch Editorial Offices

CANADA, Victor Lauriston — HOUSTON, Neil Williams — SAN ANTONIO, B. D. Stevenson
CHICAGO, Robert C. Conine — LOS ANGELES, L. P. Stockman — SHREVEPORT
DENVER, Tolbert R. Ingram — NEW YORK, C. O. Willson — TOLEDO, George A. Whitney
FT. WORTH, L. E. Bredberg — OIL CITY, Leon H. Walter — WASHINGTON, C. E. Kern

Branch Advertising Offices

NEW YORK CITY, C. L. Cain — CHICAGO, C. R. Farmer — CLEVELAND, Howard Markt
LOS ANGELES, J. H. Tinkham

(For representatives' complete addresses, see contents page)

Member, Audit Bureau of Circulations

Think It Over

The gasoline market is reported being affected by rumors circulating among jobbers that price fixing may not go into effect December 1.

Crude runs to stills continue to rise although over 2,000,000 barrels have been added to gasoline stocks in the past three weeks.

This top heavy condition would put an immediate strain upon any price fixing schedule and immensely increase the oil administration's difficulties right at the start.

It would not, therefore, be surprising if Washington delayed actual price fixing until the industry gets itself into some sort of balance that will give hope of stabilization at the price set.

It will be recalled that the administration originally believed that if overproduction could be stopped prices would adjust themselves. But, while the production of crude is being brought down, the overproduction of gasoline is increasing although we have entered the season of declining consumption.

Consequently, there has never been a chance for balanced production to adjust prices. Instead, there has been a clamor for the government to fix prices, as if that was all that is required.

Secretary Ickes has shown that he has no such delusion. His clamping down on "hot oil" and his progressive reductions in allocation to bring crude output in line with demand shows that he, at least, knows prices cannot be stabilized, officially or otherwise, while overproduction continues.

And he knows that this applies to excessive production and storage of gasoline as well as of crude oil.

Price fixing, whether by the industry or by the government, cannot be maintained while there is surplus crude or gasoline that can be "bootlegged" or disposed of below the market.

Unless crude runs to stills are lessened and additions to gasoline stocks stopped, in short, unless there is the same stern clamping down upon gasoline overproduction as there is upon overproduction of crude, proclamation of an official price schedule can be little more than a gesture.

Excessive accumulation of gasoline in anticipation of effective price fixing may prove not only a delusion but dangerous.

The administration has no intention of fixing or trying to maintain an artificial price. If it sets official prices they must be based upon actual trade conditions.

That was proved by the care with which Secretary Ickes moved. As he told the Institute at Chicago, "I was convinced that it would be a mistake to fix prices unless a proper basis of facts justifying each particular price item could be laid."

Continued unwarranted runs to stills and additions to gasoline stocks offer no proper basis for stable prices. He should not be expected to fix prices under such conditions.

There has been an altogether too quick assumption that with the announcement of price fixing December 1 everything was settled.

The reports that jobbers are risking the chance that price fixing may not be made effective by December 1 may be only another example of the continual guessing contest that goes on between jobbers and refiners.

But, suppose, that in this case the jobbers should guess better, in what shape will the refiners who have overrun their market and piled up unnecessary storage find themselves?

In his admirable address at Chicago, Secretary Ickes said very plainly that he "decided to adopt these figures (those recommended by the Planning and Co-ordinating Committee) as a basis for hearings and for independent investigations, but, to guard against mistakes, it was set up that hearings would be granted prior to December 1 to anyone in the oil industry who might have any objection either to the practical operation of the schedule or to specific prices."

"We want to know what the facts are," he said. "We will be guided by the facts."

One of those facts will be the proportion of crude runs to stills and of gasoline stocks to estimated demand.

Very significantly, Secretary Ickes said further: "If we are persuaded that the schedule as a whole, or any item in it, is not what it should be, it will be amended accordingly, and then the schedule, as and if amended, will go into effect on December 1, if it is believed on that date an emergency exists that calls for the fixing of prices."

Since that last clause was uttered there has been much speculation in oil circles, "now, what does he mean by that?"

Plainly he says that the going into effect of a price schedule on December 1 depends upon whether it is believed that on that date an emergency exists that calls for price fixing.

Evidently he believed such an emergency did exist on October 16 when he announced the original price schedule. But by December 1 he expects to have crude production down to 2,130,000 barrels a day in line with demand. If crude runs to stills can be checked and additions to gasoline stocks stopped, indicating by December 1 that the industry can be stabilized, will there then be an emergency calling for price fixing?

If the output of crude and gasoline can be got down to demand and held there by the aid of Federal regulation, prices will adjust themselves without official scheduling.

On the face of it, it looks as though the administration was giving the industry one more opportunity to escape absolute governmental control by establishing its ability, with governmental support, to run its own business.

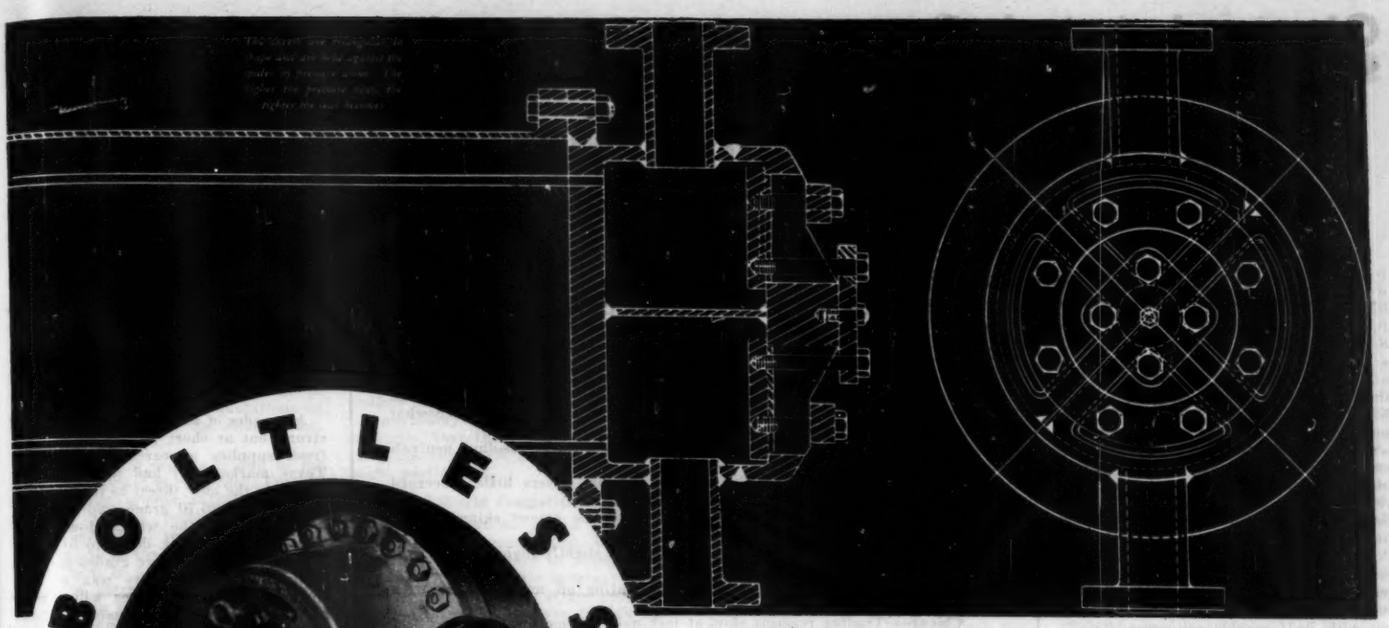
Pessimists will shake their heads, as they have a right to do considering the industry's record of helplessness during the past ten years. But that helplessness was due to outside limitations and not to lack of purpose among the great bulk of the industry.

Some of those legal and political limitations have been removed by the new policy at Washington and the industry is now being urged to do, with governmental assistance, what it was prevented before.

The immediate issue is whether the industry, backed by the government, cannot correct and control the unruly elements which threaten to wreck the industry.

They will have to be controlled if official price fixing is to be established and maintained but, if they can be controlled, there will be no emergency calling for official price fixing.

Think it over.



The new Pressure-Sealed head for high-pressure Westinghouse Heat Exchangers. Bolts are used only to hold the covers in position until they are put under pressure.

AND HOLDS A MILLION POUNDS

THE NEW PRESSURE-SEALED HEAD FOR HIGH-PRESSURE WESTINGHOUSE HEAT EXCHANGERS

● NEW—yet old enough to have proved itself in actual service—is the pressure-sealed head used on high-pressure Westinghouse Heat Exchangers.

Examine carefully the photograph and the section drawing. The inlet channel and tube plate are of forged steel for maximum strength, and the forged removable covers are held tightly in place by internal pressure alone. The higher the pressure the better the seal.

This construction entirely eliminates the multiplicity of bolts under tension that are required with bolted-head construction.

Consider the safety of this construction . . . there is no weakening due to bolt holes. Consider the ease and speed with which covers may be removed for inspection or cleaning of tubes. Consider its high use-factor—elimination of tension bolts prevents leakage.

Westinghouse Heat Exchangers have many other features that assure low maintenance and longer periods "on stream"—such as welded seams, flanges and nozzles, double-grooved tube holes, Lamiflex Seals in 2-pass shell exchangers. For complete information simply mail the coupon.

Westinghouse

Quality workmanship guarantees every Westinghouse product

SEND FOR BOOKLET

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.

Please send me a copy of C. 1924, "Westinghouse Heat Exchangers."

Name .....

Company .....

Position .....T 79703

Address .....O&GS 11-2-33

Sluggish Mid-Continent Market Is Attributed to Incredulity Regarding Price-Fixing Order

By W. T. ZIEGENHAIN

Inability of the Group 3 (Oklahoma) refinery market to advance in the last week is generally attributed to a growing belief that price fixing will not be instituted December 1 as indicated by Secretary Ickes on October 16. Jobbers, at first disposed to rush into the market and make purchases at prices under those expected to be in force on December 1, now feel that there is no need to push orders through and in many instances are drawing upon storage for current needs. This rather sharp change of view is based entirely upon the Secretary's own statement on price fixing before the American Petroleum Institute in Chicago last week.

"This schedule is based upon $1.11 crude in the Mid-Continent Field and was prepared and presented to me by the Planning and Co-ordinating Committee with its favorable recommendation," said Mr. Ickes in his Chicago address. "But to guard against mistakes, it was set up in the order that hearings would be granted prior to December 1 to anyone in the oil business who might have any objection either to the practical operation of the schedule as a whole or to specific prices declared in that schedule. We will hold hearings upon facts. If we are persuaded after studying the matter that the schedule as a whole or any item is not what it ought to be, it will be amended accordingly and then the schedule, as amended as a result of these hearings, will go into effect on December 1 next, if it is believed that on that date an emergency exists that calls for the fixing of prices."

Doubt Emergency Can Be Proved

The last sentence quoted, which makes price fixing contingent upon the existence of an emergency, is interpreted by most marketers to mean that it remains necessary for those favoring price fixing to convince the Secretary that an emergency exists, and most of the buyers evidently feel this can not be done. It also becomes apparent from the Secretary's address that he is fully aware of the vast responsibilities to be assumed by the Government if price fixing is instituted. He evidently does not favor this course unless driven to it through absolute necessity.

Viewing matters in this light, buyers are willing to wait and run the chance of having to pay 6½ cents for 64 octane motor gasoline which they can now buy for 1 to 1½ cents less. Other products are selling at about the same relative price differential.

It may be readily seen they are taking a stand which will prove costly if the original schedule of prices goes through particularly in instances where jobbers are withdrawing oil from storage. Jobbers prefer to convert into cash at a profit those supplies they have accumulated over the last four months at lower prices than those prevailing now. While they are doing this, however, they are making it easier for the refiners to maintain a higher market at some future date.

A few refiners point out the possibility of fixed prices being instituted December 1 at the schedules originally established, in which case jobbers will be forced to buy current needs. Refiners then will be relieved of having to go through the slow period of trading that always follows a general price advance.

Refined Oil Market Barometer

Doubt that price fixing will become effective December 1 as announced, the failure thus far to curtail refinery crude runs, and the growing stocks of gasoline all tended to dampen the efforts of refiners to advance prices. Trading was routine with higher gasoline prices quoted only in Pennsylvania. The weaker domestic market along the Gulf Coast was equalized somewhat by the greater movement of export material.

Mid-Continent—Prices generally unchanged. Natural gasoline, neutrals and wax especially firm.

East Coast—Trading remains routine. Export buyers little concerned about prospects of fixed prices.

Gulf Coast—Domestic market unchanged while export shipments increased.

Pennsylvania—Gasoline stronger with prices slightly higher. Wax firm with balance of market unchanged.

California—Major improvement in lubricating oil market made with balance of products firm.

Chicago—Trading remains slow at last week's price level.

Early in the week there was a brisk movement of all grades of gasoline which promised to allow prices to advance but by Tuesday the trading subsided to the point where even the price level of a week ago was threatened. The net result is that no change is recorded.

Natural Gasoline

All grades of natural gasoline remained strong but at short periods in the week fresh supplies appeared on the North Texas market that had to be absorbed. This was the only threat to the Oklahoma market. The 26-70 grade sold up to 5⅜ cents early in the week. However, on Tuesday it was back down to 5¼ cents. The low vapor pressure grades moved in small volume and there was no price change. The course prices will take on this grade of material promises to follow that of refinery gasoline very closely over the coming month.

Kerosene and Distillates

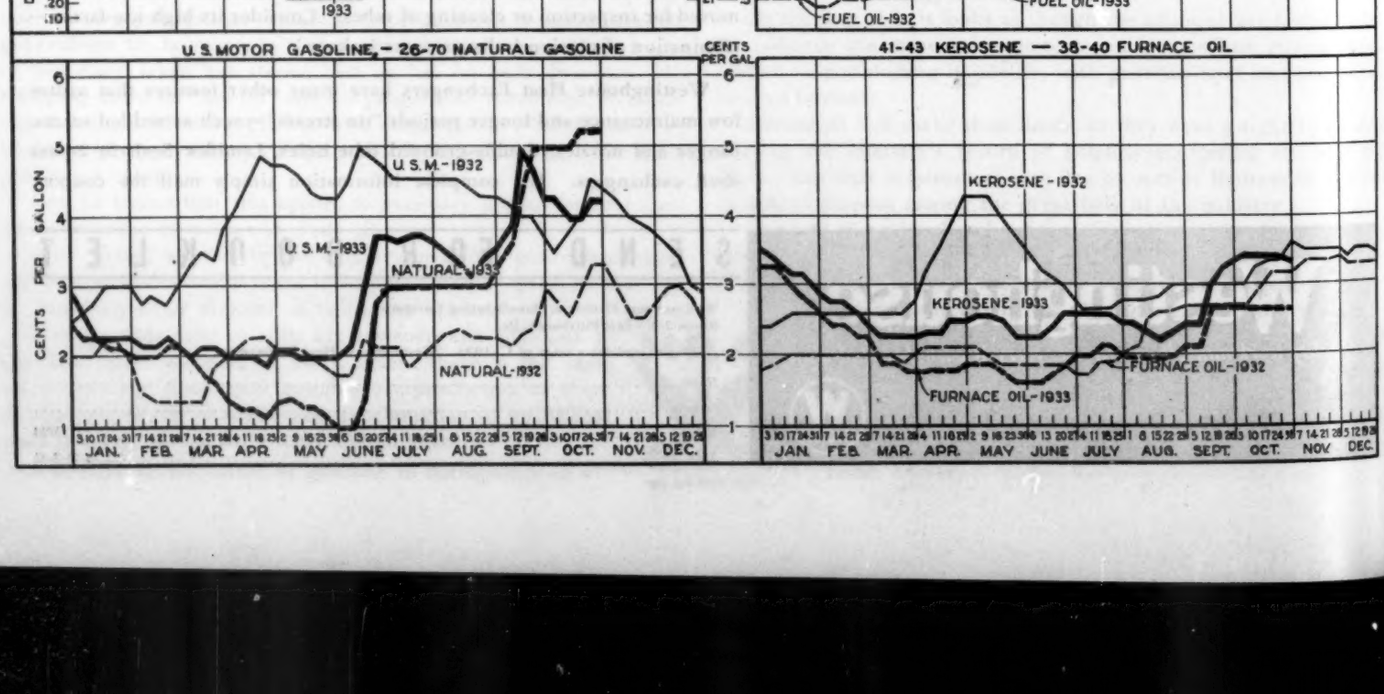
Low endpoint kerosene had no trouble finding an active market, but the higher endpoint 41-42 grade sold at 3⅜ cents. Still lower prices were quoted on kerosene not passing the most stringent burning tests. No change was recorded in the prices quoted for furnace distillates. Consumers are well stocked and until cold weather eats into these stocks there is little chance for the distillate market to move upward, except through the agency of price fixing.

Gas Oil and Fuel Oils

Demands have lessened for the heavy fuel oil and the only unusual interest in the entire list is in the 28-30 gravity, zero cold test material. This continues to

(Continued on Page 32)

Representative Mid-Continent Quotations on Crude Oil and Refined Products Basis Oklahoma (Group 3)



Domestic Market on Eastern Seaboard Is Little Changed and New Export Business Is Dull

By C. O. WILLSON
New York Bureau, The Oil and Gas Journal

NEW YORK, Oct. 30.—Trading in the domestic refinery market in the eastern seaboard area was along routine lines over the past week. While buying of one or more products showed improvement for one or two days, the increased activity was not continued long enough to result in higher prices, and quotations on all products are largely the same as last week.

New business in exports is dull so far as the open market is concerned. Foreign buyers do not appear sufficiently concerned as to the prospect of higher prices to cover their requirement at present prices. As in the case of the domestic market there is no general tendency to attempt to attract business with price concessions in export sales. While there are refiners and exporters who have material to sell at present quotations the prospect of further reductions in crude oil production, coupled with a substantial curtailment of crude runs to stills at refineries under government supervision, has tended to make sellers firm in their quotations.

There is discussion regarding the effect the numerous rulings out of Washington in connection with the NRA program for the oil industry will have on export markets. It is assumed that no attempt will be made to control prices on shipments from sellers in this country to foreign buyers. There are suggestions that an attempt be made to get the cooperation of foreign oil producing countries in supporting a program similar to that which has been adopted in the United States. Several efforts have been made to work out a world program for the oil industry over the past few years with indifferent success. The attempts made to stabilize prices did not receive sufficient support to make them effective for long.

A sales executive of one large company which has export facilities as well as wide distribution in the domestic market, points out that the inability to get together on a world policy may change if the United States can perfect its domestic program. In the latter event the entire world industry would have a concrete example of the advantages of controlled production and there would be the machinery which would assure other countries, that the United States would carry out any world program in which it might participate.

World Competition

The alternative to such a program is continued keen competition in foreign markets which will tend to jeopardize the success of the domestic program in this country. Several of the larger companies in the United States have foreign marketing operations which are supplied entirely or in part by refineries located in this country. Assuming that domestic prices for crude oil and refinery products will continue to advance under the government program, the prices for gasoline and other products may reach the point where they are so high that they cannot compete in foreign markets. There is some indication that condition has already developed in the case of gasoline and heavy fuels. This will mean that major export factors in the United States will have to look for cheaper sources of supply outside the United States. This in turn obviously will tend to restrict the demand for domestic crudes and enlarge the demand for crude oil produced and refined in foreign countries. In brief this situation is a recognition of the fact that world conditions control world markets in petroleum. Import taxes and other restrictions may be used to protect the petroleum markets in this country but there is no possible governmental regulation which can maintain the position of the United States in foreign markets in the face of lower priced products from South America, Rumania, Russia and other important oil-producing countries. It is understood that this condition will be brought to the attention of NRA administration at Washington next month when the proposed oil price regulations are discussed in hearings.

Sellers Mark Time

The attitude of the sellers in this territory is to mark time until there are additional developments at Washington. The almost daily rulings or interpretations that come out of the capital do not reflect a condition that points to higher prices. The trade position is that this condition will continue indefinitely pointing out the numerous provisions of the code and its price control plan which will have to be interpreted and in many cases modified before the program can be generally applied. Many believe that the price control plan will run into so many snags next month at the hearings which are to be held at Washington that the effective date of December 1 will have to be postponed.

At the same time those who make more than a superficial study of developments that have direct influence on refinery markets throughout the entire country, have been impressed with the action being taken by government representatives in regard to the curtailment of crude oil production and refinery operations. The official announcements and orders are interpreted to mean that the Government will take whatever action is necessary in reaching the objective of reducing the supply of refinery products to seasonal requirements. If no hitch develops in this control of supply and it becomes apparent that it will be permanently effective through the winter months, the refined market picture on tank car shipments in this territory could quickly change and prices come out of their apathy and move up at least to the minimum levels which are to be established by the Government effective December 1. The problem of tank wagon and retail markets would still have to be solved but a stable crude oil and refined market situation would aid materially in solving satisfactorily the numerous questions that have come up in regard to the rules covering merchandising policies.

Refinery Curtailments

Refinery operators in this territory, most of whom belong to the major class, are vitally interested in the expected action to be taken covering allocation of refinery crude runs to stills. The general aim of the government control, it is understood, will be to keep the supply of refinery products in line with the demand taking into consideration seasonal storage requirements. In any study of this plan it is readily apparent that the Government will have a difficult problem in carrying out this program without working hardships on certain refining areas and individual refiners who have unusual operating positions.

For instance, in the eastern seaboard territory most of the refiners have a much better balance between supply and demand than refiners in some of the other areas. The operations have been carried on over a long period of years and they have controlled or company-owned facilities to absorb their refinery output. Most of the surplus has come from refineries located in other sections. Should there be a drastic reduction in refinery output, certain companies would be in position of not having sufficient supply to take care of their regular trade. It is probable that they would be able to cover their requirements by purchases in other sections which have surpluses, but it does not follow that this could be done economically. The matter of transportation costs and quality of products would enter directly into this problem. This is particularly important in the case of gasoline and all grades of fuels.

(Continued on Page 42)

American Petroleum Institute Weekly Refinery Statistics

Figures below reported for week by American Petroleum Institute. (1) Per cent refinery capacity represented. (2) Daily average crude runs to stills. (3) Total motor fuel stocks. (4) Gas oil and fuel oil stocks. All figures in 42-gallon barrels.

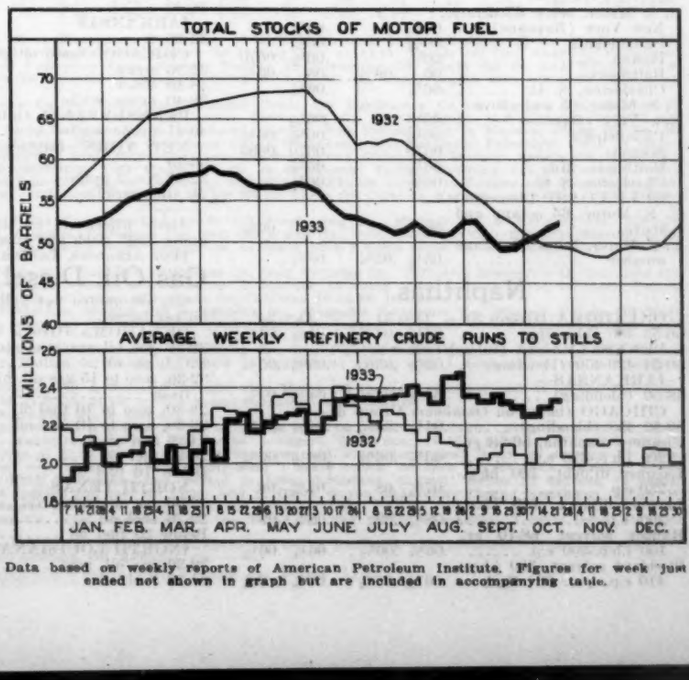
Week Ending October 28, 1933, Compared to Week Ago

	Week Ending Oct. 28, 1933				Week Ending Oct. 21, 1933			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	481,000	13,639,000	9,093,000	100.0	482,000	14,019,000	9,221,000
Appalachian	92.6	88,000	2,057,000	910,000	92.6	101,000	1,957,000	872,000
Ind., Ill., Ky.	97.3	322,000	7,310,000	6,183,000	97.3	330,000	7,546,000	6,066,900
Okla., Kans., Mo.	82.1	234,000	5,848,000	4,318,000	82 1	237,000	5,656,000	4,271,000
Inland Texas	62.2	92,000	1,379,000	1,837,000	60.2	81,000	1,310,000	1,818,000
Texas Gulf	98.1	506,000	5,897,000	6,348,000	98.0	466,000	5,502,000	6,342,000
Louisiana Gulf	100.0	128,000	1,188,000	2,085,000	100.0	130,000	1,347,000	1,914,000
N. La. and Ark.	92.6	55,000	244,000	646,000	92.6	53,000	250,000	634,000
Rocky Mnt.	78.8	31,000	857,000	726,000	78.8	37,000	834,000	719,000
California	96.9	423,000	14,308,000	96,467,000	96 9	431,000	14,331,000	97,541,000
Total U. S.	92.4	2,360,000	52,727,000	128,613,000	92.4	2,348,000	52,752,000	129,898,000

Total motor fuel stocks, Bureau of Mines basis, 54,520,000 bbls.

Week Ending October 28, 1933, Compared to Year Ago

	Week Ending Oct. 28, 1933				Week Ending Oct. 29, 1932			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	481,000	13,639,000	9,093,000	99.1	413,000	12,990,000	8,735,000
Appalachian	92.6	88,000	2,057,000	910,000	95 0	86,000	1,514,000	729,000
Ind., Ill., Ky.	97.3	322,000	7,310,000	6,183,000	97.5	292,000	6,006,000	4,093,000
Okla., Kans., Mo.	82.1	234,000	5,848,000	4,318,000	88.4	202,000	4,624,000	2,996,000
Inland Texas	62.2	92,000	1,379,000	1,837,000	72 1	83,000	1,301,000	2,102,000
Texas Gulf	98.1	506,000	5,897,000	6,348,000	98.2	375,000	5,270,000	9,868,000
Louisiana Gulf	100.0	128,000	1,188,000	2,085,000	97 3	67,000	1,448,000	3,814,000
N. La. and Ark.	92.6	55,000	244,000	646,000	94.6	42,000	194,000	530,000
Rocky Mtn.	78.8	31,000	857,000	726,000	91.4	31,000	1,166,000	457,000
California	96.9	423,000	14,308,000	96,467,000	94.6	448,000	14,964,000	100,580,000
Total U. S.	92.4	2,360,000	52,727,000	128,613,000	93.6	2,040,000	49,477,000	133,904,000



Data based on weekly reports of American Petroleum Institute. Figures for week just ended not shown in graph but are included in accompanying table.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement except as otherwise noted

EXCLUSIVE OF TAXES

The following quotations are exclusive of the Federal excise taxes of 1½ cents a gallon on gasoline and 4 cents on lubricating oils, which became effective June 17, 1933.

Refinery Gasolines

	Oct. 31		Oct. 24	
OKLAHOMA (Group 3)—				
*U. S. Motor grades:				
Third grade	.04¼	.04½	.04¼	.04½
Regular	.05	.05½	.05	.05½
Premium	.05½	.05¾	.05½	.05¾
60-62 400 grades:				
Third grade	.04⅜	.04¾	.04⅜	.04¾
Regular	.05½	.05⅝	.05½	.05⅝
Premium	.05⅝	.05⅞	.05⅝	.05⅞
64-66 390	.04¾	.05⅛	.04¾	.05¼
64-66 375	.05	.05¼	.05	.05¼
68-70 350	.05¼		.05¼	
NORTH TEXAS—				
U. S. Motor grades:				
Third grade	.04	.04¼	.04	.04¼
Regular	.04⅝	.05	.04⅝	.05
Premium	.05¼	.05½	.05¼	.05½
60-62 400	.04½		.04½	
64-66 390	.04⅞	.05¼	.04⅞	.05¼
64-66 375	.05		.05	
64-66 360	.05⅛	.05¼	.05⅛	.05¼
†NORTH LOUISIANA—				
U. S. Motor grades:				
Third grade	.04¾		.04¾	
Regular	.05½		.05½	
Premium	.06		.06	
60-62 400	.04½		.04½	
†ARKANSAS—				
U. S. Motor grades:				
Third grade	.04¾		.04¾	
Regular	.05⅝		.05⅝	.05½
Premium	.06		.06	
CHICAGO (based on Oklahoma Group 3)—				
U. S. Motor grades:				
Third grade	.04¼	.04½	.04¼	.04½
Regular	.05	.05¼	.05	.05¼
Premium	.05½	.05⅝	.05½	.05⅝
60-62 400	.04⅞	.04½	.04⅞	.04½
64-66 375	.05	.05¼	.05	.05¼
68-70 360	.05¼	.05½	.05¼	.05½
Aviation fighting grade	.05⅝	.05⅞	.05⅝	.05⅞

*Octane Ratings—The following octane ratings apply to the three grades of U. S. Motor gasoline: Regular 60-64 octane number, premium 65 and above octane number; third grade, 59 and below octane number. Octane ratings determined by C.F.R. Motor Method.

PENNSYLVANIA (inland refineries)—				
U. S. Motor	.05½	.05¾	.05⅝	.05⅝
60-62 400	.05⅝	.05⅞	.05½	.05¾
64-66 375	.06	.06¼	.05⅞	.06¼
68-70 350	.06½	.06¾	.06½	.06¾
CALIFORNIA (domestic movement)—				
54-58 U. S. Motor	.07½	.08½	.07½	.08½
58-60 400	.08¼	.09	.08¼	.09
EAST COAST—				
U. S. Motor, below 65 octane:				
New York (Bayonne)	.06¼		.06¼	
Philadelphia	.06½		.06½	
Boston	.06½		.06½	.0670
Baltimore	.06	.06¼	.06	.06¼
Charleston, S. C.	.06¼		.06¼	
U. S. Motor, 65 and above:				
New York (Bayonne)	.06½		.06½	
Philadelphia	.06½		.06½	.063⅝
Boston	.0670		.0670	.0695
Baltimore, Md.	.06½		.06½	
Charleston, S. C.	.06½		.06½	
GULF COAST (domestic)—				
U. S. Motor, 65 octane and above	.06		.06	.06¼
U. S. Motor, below 65 octane number	.05½	.05⅝	.05⅝	

Naphthas

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
50-52 450 (blending)	.04¼	.04½	.04¼	.04½
PENNSYLVANIA (inland refineries)—				
50-54 430-450 (blending)	.05⅝	.05⅞	.05⅝	.05⅞
†ARKANSAS—				
48-50 (blending)	.04½	.04¾	.04½	.04¾
CHICAGO (based on Oklahoma Group 3)—				
50-52 450 (blending)	.04¼	.04½	.04¼	.04½
Cleaners' naphtha, 56-58 gr., 200 i.b.p.-320 e.p.	.06½	.06¾	.06½	.06¾
Lacquer diluent, 180 i.b.p.-250 e.p.	.07⅝	.08	.07⅝	.08
Lacquer diluent, 140 i.b.p.-200 e.p.	.08¾	.09	.08¾	.09
Rubber solvent, 68-70 gr., 100 i.b.p.-300 e.p.	.06¼	.06½	.06¼	.06½
Stoddard solvent, 300 i.b.p.-410 e.p., over 83° flash	.06⅛	.06¼	.06¼	.06¼
V.M.&P. naphtha, 50-58 gr., 190-200 i.b.p.-330 e.p.	.06		.06	
Petroleum spirits	.05¼	.05⅝	.05¼	.05⅝

Natural Gasolines

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
Grade 18-55	.06¼	.064	.06	.06¼
Grade 26-70	.05¼		.05¼	
Grade 30-70	.04⅞		.04⅞	
Low vapor pressure grades:				
15 lb. v.p. (max.)	.06¼	.06½	.06¼	.06½
11 lb. v.p. (max.)	.06½	.06⅝	.06½	
NORTH TEXAS—				
Grade 18-55	.05⅞	.06	.05⅞	.06
Grade 26-70	.05¼		.05⅛	
Grade 30-70	.04⅝	.04¾	.04⅞	.04¾
Low vapor pressure grades:				
15 lb. v.p. (max.)	.06⅛	.06¼	.06⅛	.06¼
11 lb. v.p. (max.)	.06⅜	.06½	.06⅜	.06½
NORTH LOUISIANA—				
Grade 26-70	.05½		.05½	
CALIFORNIA—				
75-85 375	.06	.07	.06	.07

Kerosenes

(All kerosenes water white)

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
41-43	.03⅜	.03½	.03½	
42-44	.03⅝	.03¾	.03⅝	.03¾
NORTH TEXAS—				
40-41	.03¼		.03¼	
41-43	.03¼	.03⅜	.03¼	.03⅜
†NORTH LOUISIANA—				
41-43	.03¾	.04	.03¾	.04
42-44	.04		.04	
†ARKANSAS—				
41-43	.03¾		.03¾	
PENNSYLVANIA (inland refineries)—				
45	.04¾	.05	.04¾	.05
46	.05	.05⅜	.05	.05⅜
47	.05¼	.05½	.05¼	.05½
CHICAGO (based on Oklahoma Group 3)—				
41-43	.03⅜	.03½	.03⅜	.03½
42-44	.03½	.03⅝	.03½	.03⅝
*CALIFORNIA—				
38-40 high burning test	.04¼	.04¾	.04¼	.04¾
NEW YORK (Bayonne, N. J.)—				
41-43	.05¼	.05½	.05½	
GULF COAST (domestic)—				
41-43 water white	.04½	.04¾	.04½	.04¾

*For Pacific Coast consumption.
†For Arkansas, Louisiana and Mississippi delivery.

Furnace Oils and Tractor Fuels

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
32-36 straw	.02⅞	.03	.02⅞	.03
36-38 straw	.02⅝		.02⅝	
38-40 straw	.02⅞	.03¼	.02⅞	.03¼
39-41 prime	.03		.03	
NORTH TEXAS—				
38-40 straw	.02⅝	.02¾	.02⅝	.02¾
†NORTH LOUISIANA—				
36-40	.03		.03	
†ARKANSAS—				
32-36	.03		.03	
CHICAGO (based on Oklahoma Group 3)—				
32-36 straw	.02⅞	.03	.02⅞	.03
38-40 straw	.02⅞	.03⅛	.02⅞	.03
38-40 prime white	.03	.03⅛	.03	.03⅛
PENNSLYVANIA (inland refineries)—				
40-41 prime white	.04	.04⅛	.04	.04⅛
NEW YORK (Bayonne, N. J.)—				
36-40	.05½		.05½	
32-36 No. 2 grade	.04½		.04½	
21 (industrial)	.04		.04	

Above prices are for distillate oils of zero cold test under 190° flash and good odor.
†For Arkansas, Louisiana and Mississippi delivery.

Gas Oil, Diesel Oil and Fuel Oil

Gas oil quoted per gallon basis; Diesel oil and fuel oil per barrel.

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
32-36 gas oil cracking stock	.01⅞	.02⅛	.01⅞	.02⅛
U.G.I. gas oil	.02		.02	
32-36, zero to 15 gas oil, high flash	.02¼	.02⅜	.02¼	.02⅜
28-30, zero to 10 fuel oil	.85	1.05	.85	1.05
26-30, zero to 10 fuel oil	.82½	.95	.82½	.95
24-26 fuel oil	.62½	.65	.62½	.65
20-22 fuel oil	.55	.60	.55	.60
Below 16 fuel oil	.50	.55	.50	.55
NORTH TEXAS—				
32-36 gas oil, industrial	.02		.02	
22-26 fuel oil	.57½	.62½	.57½	.62½
Below 20 fuel oil	.47½	.50	.47½	.50
†NORTH LOUISIANA—				
32-36 gas oil, zero	.03		.03	
14-16 fuel oil	.55	.60	.55	.60
†ARKANSAS—				
30-32 gas oil, zero	.02¾		.02¾	.03
32-36 furnace oil	.03			
14-16 fuel oil	.50		.50	.55
CHICAGO (based on Oklahoma Group 3)—				
32-36 gas oil, industrial	.01⅞	.02	.01⅞	.02
28-30 (zero) fuel oil	.87½	.97½	.85	.95
26-28 (zero) fuel oil	.75	.80	.75	.77½
22-26 (zero) fuel oil	.65	.67½	.65	.67½
18-22 (zero) fuel oil	.60	.62½	.57½	.62½
Below 18 fuel oil	.42½	.45	.42½	.45

Note: Fuel oils of more than 40 cold test generally 5 to 15 cents per barrel less in all areas than shown in above tables.
†For Arkansas, Louisiana and Mississippi delivery.

PENNSYLVANIA (inland refineries)—				
36-40	.04	.04⅛	.03⅞	.04
CALIFORNIA—				
30-34 gas oil per bbl.	.90	1.05	.90	1.05
27 plus Diesel	.90	1.00	.90	1.00
15-19 bunker (at tidewater)	.55	.65	.55	.65
15-19 (cargo lots)	.50	.60	.50	.60
15-19 (tank cars)	.45	.65	.45	.65
GULF COAST—				
28-30 gas oil	.03½		.03½	
28-30 Diesel	1.80		1.80	
Bunker C (bulk cargoes)	.92½	.95	.92½	.95
Bunker C (bunkers)	.95		.95	
NEW YORK (Bayonne, N. J.)—				
28 plus, gas oil	.03½		.04½	
28-30 Diesel (lighterage 6½ cents per bbl.)	1.95		1.95	
28-30 Diesel (tank cars)	.04½		.04½	
*Bunker C (to ocean-going ships in N. Y. harbor)	1.10		1.10	

*Lighterage charge 5 cents additional.

Petroleum Coke*

Prices per ton f.o.b. refineries in Chicago area.

	Oct. 31		Oct. 24	
Pile run (screenings)	4.50		4.50	
Direct from still	5.50		5.50	
Lump and egg	7.50	7.75	7.50	7.75

*Refineries will absorb freight to 80 cents a ton.

Neutral Oils

(Viscosity at 100° F. and color)

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
Zero to 10 Cold Test:				
150-3	.07¼	.07½	.07¼	.07½
180-3	.08½	.08¾	.08½	.08¾
180-4	.08¼	.08½	.08¼	.08½
200-3	.09	.09¼	.09	.09¼
200-4	.08¾	.09	.08¾	.09
240-3	.11	.11¼	.11	.11¼
240-4	.10¾	.11	.10¾	.11
280-3	.12	.12¼	.12	.12¼
280-4	.11½	.11¾	.11½	.11¾
300-3½	.12¾	.13	.12¾	.13
350-3½	.13¾	.14	.13¾	.14
400-4	.14¾	.15	.14¾	.15
500-4½	.15¾	.16	.15¾	.16
100-2 paraffin oil	.05¼	.05½	.05¼	.05½
15-30 Cold Test:				
200-3	.08¼	.08¼	.08¼	.08½
200-4	.08	.08¼	.08	.08¼
240-3	.10¾	.10½	.10¼	.10½
240-4	.10	.10¼	.10	.10¾
280-3	.11¼	.11½	.11¼	.11½
280-4	.11	.11¼	.11	.11¾
PENNSYLVANIA—				
150 vis., No. 3, 400-405:				
Zero pour test	.17	.17½	.17	.17½
10 pour test	.16½	.16¾	.16½	.16¾
15 pour test	.15	.15¼	.15	.15¼
25 pour test	.14¼	.14½	.14¼	.14½
180 vis., No. 3, 25 pour test	.16¾	.17	.16¾	.17
200 vis., No. 3:				
Zero pour test	.21½	.21¾	.21½	.21¾
10 pour test	.20½	.20¾	.20½	.20¾
15 pour test	.19½	.19¾	.19½	.19¾
25 pour test	.19¼	.19½	.19¼	.19½
GULF COAST—				
Pale Oils:				
200-3	.06½		.06½	
300-3	.07	.07½	.07	.07½
500-3½	.07¾	.08¼	.07¾	.08¼
750-3½	.08½	.09	.08½	.09
1,200-3½	.09¼	.09½	.09¼	.09½
2,000-4	.10	.10½	.10	.10½
Red Oils:				
200-5-6	.05½		.05½	
300-5-6	.06	.06¼	.06	.06¼
500-5-6	.06¾	.07¼	.06¾	.07¼
750	.07½	.08	.07½	.08
1,200-5-6	.08¼	.08¾	.08¼	.08¾
2,000-6 plus	.09½	.09¾	.09½	.09¾

CALIFORNIA—				
Pale Oils:				
100-2½-3	.16	.16½	.09	.09½
200-2½-3	.16½	.17	.09½	.10
300-3-3½	.17		.10½	.11
350-3-4	.17	.17¼	.11	.11½
400-3-4	.17	.17½	.11½	.11¾
450-3-4	.17	.18	.11¾	.12
500-3-4	.18	.18½	.12	.12½
600-3-4	.18	.19	.12	.13
Red Oils:				
300-4-5	.17		.09½	.10
300-5-6	.17	.17¼	.10½	.11
350-5-6	.17	.17½	.11	.11½
400-5-6	.17	.17¾	.11½	.11¾
450-5-6	.17	.18	.11¾	.12
500-5-6	.18		.12	.12½
600-5-6½	.18	.18¼	.12¼	.12½
700-6½ plus	.18	.18½	.12½	.12¾
750-6½ plus	.18	.18¾	.12¾	.13
900-6½ plus	.18¾	.19¼	.13	.14

Bright and Steam Refined Stocks

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
630 light green	.09½	.12	.09	.12
600 light green S.R.	.07	.09	.07	.09
600 dark green S.R.	.05	.07	.05	.07
Bright Stocks:				
190-200 D	.24	.25	.24	.25
150-160 D, 0-10	.22¼	.22½	.22¼	.22½
150-160 D, 10-25	.21¾		.21¾	
150-160 D, 25-40	.21¼		.21¼	
150-160 E	.20½		.20½	
PENNSYLVANIA—				
600 S.R.	.16	.16¼	.16	.16¼
650 S.R.	.18	.18¼	.18	.18¼
600 Pennsylvania flash	.19	.19¼	.19	.19¼
650 D filtered	.23¾	.24	.23¾	.24
600 E filtered	.19¼	.19½	.19¼	.19½
Pennsylvania Grade bright stock:				
No. 8 color, 145-50 at 210; 540-550 flash:				
10 pour test	.27½	.27¾	.27½	.27¾
15 pour test	.26	.26½	.26	.26½
25 pour test	.25¼	.25¾	.25¼	.25¾

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—	Oct. 31		Oct. 24	
124-126 white crude scale	.03¾		.03¾	
PENNSYLVANIA—				
122-124	.0405		.0405	
124-126	.04	.0410	.0410	
NEW YORK HARBOR—				
124-126 yellow scale	.03⅞	.04	.03⅞	.04⅛
120-122 wax (a.m.p.)	.04	.0410	.04	.0410
125-127 fully refined	.0430	.0435	.0430	.0435
130-132 fully refined	.0465	.0470	.0465	.0470
133-135 fully refined	.0530		.0530	
135-137 fully refined	.0555		.0555	
Petrolatum in barrels in carload lots:				
Dark green	.01⅝		.01⅝	
Amber	.02¼	.02½	.02¼	.02½
Extra amber	.02⅜		.02⅜	
Lily white	.06	.06¼	.06	.06¼
Snow white	.07	.07¼	.07	.07¼
Cream	.04¼	.05	.04¼	.05
CHICAGO (f.o.b. switching district)*—				
122-124	.0440	.0450	.0440	.0450
125-127	.0465	.0475	.0465	.0475
127-129	.0480	.0490	.0480	.0490
130-132	.0540	.0550	.0540	.0550
132-134	.0565	.0575	.0565	.0575

*Cents per pound on carlot orders in burlap bags of 225 lbs. approx. Add 3° F. a.m.p.

Export Prices

GASOLINE

GULF COAST—	Oct. 31	Oct. 24
U. S. Motor	.05⅝	.05½
60-62 400	.05¾	.05¾
61-63 390	.05¾ .05⅞	.05⅞
64-66 375	.06	.06

LOS ANGELES, CALIF.—				
U. S. Motor grades:				
53-55 octane	.04½	.05	.04½	.05
55-65 octane	.05	.05¼	.05	.05¼
65-67 octane	.05½	.06	.05½	.06
67-60 octane	.06¼	.06¾	.06¼	.06¾
Above 69 octane	.07	.08	.07	.08
58-60 400 endpoint	.05¼	.06¼	.05¼	.06¼
KEROSENE				
GULF COAST—				
41-43 prime white	.04½	.04¼	0.4½	.04¼
41 water white	.04¼	.04⅜	.04¼	.04⅜
LOS ANGELES, CALIF.—				
41-43 water white	.03¾	.04¼	.03¾	.04¼
LUBRICANTS				
NEW YORK (f.a.s. in bbls.)—				
600 Warren E	.25½	.26½	.25½	.26½
600 S.R. unfiltered	.22½	.23½	.23	.24
650 S.R. unfiltered	.24½	.25½	.25	.26
600 flash S.R.	.25½	.26½	.26	.27
630 flash S.R.	.29½	.30½	.30	.31
Bright stock, No. 8 color	.32½	.33½	.31½	.33
Bright stock, No. 6½ color, dil.	.31½	.32½	.30½	.31½
NEUTRALS				
NEW YORK—Pale Engine Oil, Bulk (vis. at 100)—				
100-2½	.07½	.08	.07½	.08
180-3½	.12	.13	.12	.13
230-3¾	.13	.14	.13	.14
Red Engine Oil, Bulk (vis. at 100):				
200-6	.07½	.08½	.07½	.08½
250-6	.08	.08¾	.08	.08¾
300-6½	.09	.09½	.09	.09½
PARAFFIN WAX (Fully Refined)				
NEW YORK (prices per pound)—				
123-125 a.m.p.	.04½		.04½	
125-127 a.m.p.	.04¾		.04¾	.04⅝
130-132 a.m.p.	.04⅝		.04⅝	
133-135 a.m.p.	.05¼		.05¼	
135-137 a.m.p.	.05½		.05½	

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

East Texas	$1.00
Stratman, Kans. (Sept. 29, 1933)	1.08
Corsicana (heavy) (June 17, 1933)*	.30
Other fields	(See gravity table)

Note—In East Texas, effective September 28, 1933, by Texas Co., Stanolind Crude Oil Purchasing Co., Humble Oil & Refining Co., Shell Petroleum Corp., Gulf Pipe Line Co., Tide Water Oil Co., Sinclair Prairie Oil Marketing Co., Magnolia Petroleum Co., Sun Oil Co., Panola Pipe Line Co. and Empire Oil & Refining Co.

*Magnolia Petroleum Co. †Eldorado Refining Co.

West Texas

Texas, Upton, Crockett, Howard, Glasscock, Mitchell (Sept. 29, 1933)	$.75
Victor, Winkler and Pecos Counties and Lea County, New Mexico (Sept. 29, 1933)	.70
Pecos County, Yates shallow pool (Sept. 28, 1933)*	.65
Jones and Fisher Counties	See gravity table

Note—Effective September 29, 1933, by Humble Oil & Refining Co., Texas Co., Gulf Pipe Line Co., Shell Petroleum Corp., Magnolia Petroleum Co., and by Stanolind Oil & Gas Co. in Winkler County, Texas.

*Shell Petroleum Corp.

Gulf Coast

Grade A and Grade B specifications discontinued by leading buyers	(See gravity table)
Tomball (see note)*	$1.15
Livingston (Sept. 29, 1933)†	1.00
Greta (Sept. 29, 1933)	.85
Refugio, light	(See gravity table)
Refugio, heavy (Sept. 29, 1933)‡	.85
Markham and High Island	(See Gulf Coast gravity table)
Conroe	(See Conroe gravity table)

Note—Tomball, effective September 29, by Humble Oil & Refining Co., and October 2 by Magnolia Petroleum Co.

*Greta posted by Texas Co. †Shell Petroleum Corp. ‡Refugio heavy, by Humble Oil & Refining Co.

South Central and Southwest Texas

(See note below table)

Darst Creek	$.87
Mirando	.80
Luling (Sept. 29, 1933)	.75
Pettus	1.05
Salt Flat	.87
Lytton Springs (Sept. 29, 1933)	.95
Duval County (Sept. 29, 1933)	.80
Saxet	.85

Note—Effective on September 29 by Humble Oil & Refining Co. in Darst Creek, Mirando, Pettus, Salt Flat and Saxet. Effective September 29 in Darst Creek by Gulf Pipe Line Co. and Texas Co. Effective October 2 by Magnolia Petroleum Co. Effective in Pettus and Salt Flat on September 29 by Humble Oil & Refining Co. and Gulf Pipe Line Co. Luling and Lytton Springs by Magnolia Petroleum Co. Duval County by Texas Co. Saxet, effective September 29, by Humble Oil & Refining Co. and Texas Co. Effective September 29 in Salt Flat by Shell Petroleum Corp.

Rocky Mountain States

Elk, light (Sept. 29, 1933)	$.98
Elk, heavy (Sept. 29, 1933)	.90
Florence, Colo. (June 17, 1933)	.30
Fort Collins and Wellington, Colo. (June 17)	(See Salt Creek prices)
Big Muddy (Sept. 28, 1933)	1.01
Frannie, light (Sept. 29, 1933)	.87
Frannie, heavy (Sept. 29, 1933)	.62
Salt Creek and La Barge (Sept. 9, 1933)	See Stanolind Mid-Continent price schedule
Grass Creek, light (Sept. 29, 1933)	1.18
Grass Creek, heavy (Dec. 15, 1932)	.45
Elk Basin (Sept. 29, 1933)	1.18
Rock Creek (Sept. 29, 1933)	1.02
Dutton Creek (July 5, 1933)	See Mid-Continent gravity prices

(Continued on Page 31)

Crude Oil Gravity Table

Degrees gravity—	1 Oklahoma and Kansas	2 North Texas, Central Texas and East Central Texas	3 North Louisiana and Arkansas	4 Gray County, Texas	5 Carson, Hutchinson and Moore Counties, Texas	6 Conroe, Texas	7 Salt Creek, Wyo.	8 Gulf Coast, Texas and Louisiana	9 Gulf Coast, Texas and Louisiana	10 Caddo, Louisiana	11 Sabine-DeSoto, Louisiana	12 Homer, Louisiana	13 Sarepta-Carterville, Louisiana	14 El Dorado, Arkansas	15 Haynesville, Louisiana	16 Miller County, Arkansas	17 Cotton Valley, Louisiana
Below 20	....	....	....	....	....	....	....	$.82	$.82	....	....	....	....	....	....	....	....
20-20.9	....	....	....	....	....	....	....	.84	.84	....	....	....	....	....	....	....	....
21-21.9	....	....	....	....	....	....	....	.86	.86	....	....	....	....	....	....	....	....
22-22.9	....	....	....	....	....	....	....	.88	.88	....	....	....	....	....	....	....	....
23-23.9	....	....	....	....	....	....	....	.90	.90	....	....	....	....	....	....	....	....
24-24.9	....	....	....	....	....	....	....	.92	.92	....	....	....	....	....	....	....	....
Below 25	*$.76	....	....	....	....	....	....	....	....	$.63	$.69	$.73	$.75	$.75	$.65	$.62	$.76
25-25.9	*.78	....	....	....	....	....	....	.94	.94	.65	.71	.73	.77	.77	.67	.64	.72
26-26.9	*.80	....	....	....	....	....	....	.96	.96	.67	.73	.75	.79	.79	.69	.66	.74
27-27.9	*.82	....	....	....	....	....	....	.98	.98	.69	.75	.77	.81	.81	.71	.68	.76
28-28.9	*.84	....	....	....	....	....	....	1.00	1.00	.71	.77	.79	.83	.83	.73	.70	.78
Below 29	.84	$.79	$.79	....	....	....	$.84	....	....	....	....	....	....	....	....	....	....
29-29.9	.86	.81	.81	....	....	....	.86	1.02	1.02	.73	.79	.81	.85	.85	.75	.72	.80
30-30.9	.88	.83	.83	....	....	....	.88	1.04	1.04	.75	.81	.83	.87	.87	.77	.74	.82
31-31.9	.90	.85	.85	....	....	....	.90	1.06	1.05	.77	.83	.85	.89	.89	.79	.76	.84
32-32.9	.92	.87	.87	....	....	....	.92	1.08	1.06	.79	.85	.87	.91	.91	.81	.78	.86
33-33.9	.94	.89	.89	....	....	....	.94	1.10	1.07	.81	.87	.89	.93	.93	.83	.80	.88
34-34.9	.96	.91	.91	....	....	....	.96	1.12	1.08	.83	.89	.91	.95	.95	.85	.82	.90
Below 35	....	....	....	$.79	$.69	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	.98	.93	.93	.81	.71	$1.09	.98	1.12	1.09	.85	.91	.93	.97	.97	.87	.84	.93
36-36.9	1.00	.95	.95	.83	.73	1.11	1.00	1.12	1.10	.87	.93	.95	.99	.99	.89	.86	.94
37-37.9	1.02	.97	.97	.85	.75	1.13	1.02	1.12	1.11	.89	.95	.97	1.01	1.01	.91	.88	.94
38-38.9	1.04	.99	.99	.87	.77	1.15	1.04	1.12	1.12	.91	.97	.99	1.03	1.03	.93	.90	.94
39-39.9	1.06	1.01	1.01	.89	.79	1.17	1.06	1.12	1.13	.93	.99	1.01	1.05	1.05	.95	.92	1.00
40 and over	1.08	1.03	1.03	.91	.81	1.19	1.08	1.12	1.14	.95	1.01	1.03	1.07	1.07	.97	.94	1.02

*The following companies purchasing crude oil in Kansas or Oklahoma, or both, begin their price schedules: Below 25 degrees, 74 cents; 25-25.9 degrees, 76 cents, with 2 cents added for each degree upward to 40 and over at $1.08; Carter Oil Co., Magnolia Petroleum Co., Pure Oil Co., Rock Island Refining Co., Shell Petroleum Corp., Sinclair Prairie Oil Marketing Co., Skelly Oil Co. and Wilcox Oil & Gas Co. All others begin their schedule at below 29 degrees, 64 cents, excepting Phillex Oil Co. which begins with below 31 degrees at 82 cents.

Column 1—Effective September 29, The Texas Co. in Oklahoma, Stanolind Crude Oil Purchasing Co. in Kansas and Oklahoma; Anderson & Prichard, Inc., in Oklahoma; Bell Oil & Gas Co. in Oklahoma and Kansas; Deep Rock Oil Co. in Oklahoma; Derby Oil Co. in Kansas; Globe Refining Co. in Oklahoma; Golden Rule Refining Co. in Kansas; Gypsy Oil Co. in Oklahoma and Kansas; Kanotex Refining Co. in Kansas; Magnolia Petroleum Co. in Oklahoma; Mid-Continent Petroleum Corp. in Oklahoma; National Refining Co. in Kansas and Oklahoma; Shell Petroleum Corp. in Kansas and Oklahoma; Sinclair Prairie Oil Marketing Co. in Kansas and Oklahoma; The Texas Co. in Oklahoma; Tide Water Oil Co. in Oklahoma; Vickers Refining Co. in Kansas; Continental Oil Co. in Kansas and Oklahoma; Empire Pipe Line Co. in Oklahoma and Kansas; Phillex Oil Co. in Kansas and Oklahoma; Pure Oil Co. in Oklahoma; Skelly Oil Co. in Kansas. Effective September 29, by White Eagle Oil Corp. in Kansas; on October 1 by Barnsdall Refineries, Inc., in Oklahoma.

Column 2—Effective September 29, by the Texas Co., Stanolind Crude Oil Purchasing Co., Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Gulf Pipe Line Co., Magnolia Petroleum Co., Bell Oil & Gas Co., Continental Oil Co. Effective September 29 in the Van Pool, Van Zandt County, the Pure Oil Co. posted below 29 degrees, 84 cents, with 2 cents added for each degree up to 40 and over at $1.08.

Column 3—Effective September 29 by the Texas Co., Magnolia Petroleum Co., Gulf Refining Co. Effective September 29, Stanolind Oil & Gas Co. in Pine Island, Louisiana, and Marion County, Texas, posted below 35 degrees, 63 cents, with 2 cents added for each degree up to 40 and over at 95 cents. For Standard Oil Co. of Louisiana's prices see Columns 10 to 16, inclusive.

Column 4—Effective September 29 by the Texas Co., Humble Oil & Refining Co., Magnolia Petroleum Co., Sinclair Prairie Oil Marketing Co. and H. F. Wilcox Oil & Gas Co. On same day Phillex Oil Co. posted below 31 degrees, 71 cents, with 2 cents added for each degree up to 40 and over at 91 cents.

Column 5—Effective September 29 by the Texas Co., Humble Oil & Refining Co., Gulf Pipe Line Co., Magnolia Petroleum Co., Wilcox Oil & Gas Co., Continental Oil Co. On same day, Phillex Oil Co. posted below 31 degrees, 61 cents, with 2 cents added for each degree upward to 40 and over at 81 cents.

Column 6—Effective September 29 by the Humble Oil & Refining Co. and Tide Water Oil Co., and on September 30 by the Texas Co. which on September 29 had posted a schedule of $1.07 to $1.12, with a 1-cent spread on each degree.

Column 7—Effective September 29 by the Stanolind Oil & Gas Co.

Column 8—Effective September 29 by the Humble Oil & Refining Co., Gulf Pipe Line Co., Shell Petroleum Corp., Pure Oil Co., Sinclair Prairie Oil Marketing Co. On October 2, Magnolia Petroleum Co. posted Lockport, Louisiana: 20-30.9 degrees, 84 cents, with 2 cents added for each degree upward to 34 and over at $1.12, and in Cameron Meadows and Iowa, Louisiana: Below 26 degrees, 72 cents, with 2 cents added for each degree up to 34 and over at $1.02. These prices were 2 cents higher on each degree than Magnolia prices posted on September 29. Effective September 29, Shell Petroleum Corp. posted in Iowa, Louisiana, district: Below 30 degrees, 70 cents, with 2 cents added for each degree upward to 34 degrees and over at $1.06; and in Black Bayou and White Castle, Louisiana: Below 30 degrees, 80 cents, with 3 cents added for each degree upward to 34 degrees and over at $1.16.

Column 9—Effective September 30, the Texas Co. (On September 29, the Texas Co. had posted a schedule 2 cents lower on each degree, but changed it on September 30.)

Columns 10, 11, 12, 13, 14, 15, 16—Effective September 29, by the Standard Oil Co. of Louisiana and Louisiana Oil Refining Co.

Column 17—Effective September 29, by the Louisiana Oil Refining Co.

(California Crude Oil Prices on Page 31)

TANK WAGON MARKETS

Quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, include taxes

October 31, 1933

Taxes

The gasoline quotations given in the following tables include the 1½-cent Federal tax effective June 17, 1933, as well as state, county and city taxes. The gasoline quoted is the regular or standard grade. In most marketing areas a third or competitive grade is available at 1 or more cents per gallon under the service station price for the regular grade. Ethyl Gasolines are sold 2 cents above the service station price for the regular grade.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atlanta, Ga. ..	21.5	21 5	7.5	14.0
Augusta	21.5	21.5	7.5	14.0
Macon	22.0	22.0	7.5	14.0
Savannah	22.0	22.0	7.5	14.0
Birm'ham, Ala.	24.0	24.0	8.5	13.5
Mobile	23.0	23.0	8.5	12.5
Montgomery ..	25.0	25.0	8.5	14.5
Jackson, Miss..	22.0	22.0	7.5	13.0
Vicksburg	20.5	20.5	7.5	13.0
Jack'ville, Fla..	22.0	22.0	8.5	13.5
Miami	22.0	22.0	8.5	13.5
Pensacola	20.0	20.0	8.5	13.5
Tampa	22.0	22.0	8.5	13.5
Lexington, Ky..	19.0	19.0	6.5	11.0
Covington	20.0	20.0	6.5	11.0
Louisville	19.0	19.0	6.5	11.0
Paducah	19.5	19.5	6.5	11.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city and county tax of 2½ cents on gasoline and one-half cent on kerosene. Kerosene prices in Georgia and Mississippi include 1-cent state tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fortieth cent on gasoline. To Pensacola, Mobile and Birmingham state taxes on gasoline add 1-cent city tax.

Southwestern District

MAGNOLIA PETROLEUM CO.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Dallas, Tex. ...	16.5	19.5	5.5	8.5
Fort Worth ...	16.5	19.5	5.5	8.5
Houston	16 5	18.5	5.5	8 5
San Antonio ..	16.5	19.5	5.5	8.5
El Paso	17.0	20.0	5 5	8 5
Texarkana	*19.5	19 5	5.5	8.5
Muskogee	16.0	18.5	5 5	8 5
Okla. City	16.0	18.5	5 5	8 5
Tulsa	16 0	18.5	5 5	8 5
Ft. Smith Ark.	*17.9	17.9	6.5	9.0
Little Rock ...	*20.4	20.4	7 5	9.0

*Less 2 cents to dealers.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Chicago	17.8	17.8	4.5	9.7
Decatur, Ill. ..	18.2	18.2	4.5	10.2
E. St. Louis ..	17.5	16.7	4.5	9.5
Joliet	18.2	18.2	4.5	10.2
Peoria	18.2	18.2	4.5	10.2
Quincy	15.8	15.8	4.5	10.0
Davenport, Ia..	18.1	18.1	4.5	10.1
Des Moines ..	18.1	18.1	4.5	9.0
Mason City ...	18.1	18.1	4.5	10.1
Sioux City	17.7	17.7	4.5	9.7
Duluth, Minn..	18.7	18.7	4.5	10.4
Mankato	18.2	18.2	4.5	10.2
Minneapolis ...	18.4	18.4	4.5	10.4
LaCrosse, Wis..	19.8	19.8	5.2	10.9
Green Bay	19.2	19.2	5.5	10.2
Milwaukee	18.7	18.7	5.5	9.7
Madison	18.9	18.9	5.5	9.9
Detroit, Mich...	18.0	18.0	4.5	10.5
Grand Rapids ..	18.2	18.2	4.5	10.2
Saginaw	18.5	18.5	4.5	10.5
Evansville, Ind.	19.0	17.5	5.5	10.0
Indianapolis ...	19.2	19.2	5.5	10.2
South Bend ...	19.5	19.5	5.5	10.5
Fargo, N. Dak.	20.1	20.1	4.5	12.1
Huron, S. Dak.	20.4	20.4	5.5	11.4
Sioux Falls ...	19.9	19.9	5.5	10.9
K. C., Mo.* ...	17.2	17.2	4.5	7.5
Springfield* ...	17.1	17.1	4.5	9.1
St. Louis	16.2	16.2	4.0	8.7
St. Joseph* ...	16.8	16.8	4.5	8.8
Wichita, Kans.	16.1	16.1	4.5	8.1
Bartlesville, Ok.	16.6	17.0	5.5	9.5

*State tax 2 cents, 1-cent city tax and 1½-cent Federal tax.

Effective June 1, 1933—Discounts off tank wagon price to consumers on 500 gallons or more per month in territory outside of Chicago metropolitan area: 2 cents on Ethyl and Red Crown gasolines, and 1 cent on Stanolind gasoline. One-half cent additional discount in Chicago division.

Effective July 1, 1933—Discounts on resellers authorized agent's agreement made off the service station price throughout the territory as follows: 2.5 cents on Red Crown Ethyl and Standard Red Crown gasolines, and 1.5 cents on Stanolind gasoline. Half of reduction from normal service station price shall be absorbed by resellers up to maximum of 1 cent on all grades.

Stanolex Furnace Oil in Chicago

Effective September 13, 1933, prices f.o.b. Chicago, tank wagon prices: No. 1 (36-40 lt. stw. zero), under 100 gallons, 9¼ cents; No. 2 (30-34 stw zero), 7¾ cents; No. 3 (22-26 zero), 7¼ cents; No. 4 under 300 gallons (12-16 zero), 6¼ cents; viscosity of No. 4, 90-115 at 100° F.; No. 5 under 300 gallons, 6 cents; for deliveries of 100 gallons or more deduct 1 cent.

Naphtha

	Tank Wagon	Tank Car
Oleum spirits	11.9	7.69
V.M.&P. naphtha	15.9	8.44
Cleaners' naphtha	15.0	8.94
Stanisol	15.0	8 19

Prices f.o.b. Chicago, September 13, 1933. Each of above prices subject to discount of 1 cent per gallon for 150-gallon lots if covered by contracts.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atl'tic City, N.J.	19.3	18.7	4.5	10.0
Newark	18.5	18.0	4.5	9.5
Annapolis, Md..	19.8	19.3	5.5	10.0
Baltimore	19.3	18.8	5.5	9.0
Cumberland ...	20.8	20.3	5.5	12.7
Wash'g'n, D. C.	17.5	17.0	3.5	11.0
Danville, Va. ..	21.9	21.4	6.5	12.9
Norfolk	20.4	19.9	6.5	11.3
Petersburg	21.2	20.7	6.5	11.4
Richmond	20.8	20.3	6.5	11.7
Roanoke	22.0	21.5	6 5	12 9
Charls'n, W.Va.	20.2	19.7	5.5	12.6
Parkersburg ..	19 5	19 0	5.5	11.2
Wheeling	20.2	19.0	5.5	12.2
Charlotte, N. C.	24.6	23.1	7.5	13.5
Hickory	23.9	23.4	7.5	13.7
Mt. Airy	23.9	23.4	7.5	13.8
Raleigh	23.4	23.9	7.5	13.2
Salisbury	23.7	23.2	7.5	13.6
Charleston, S.C.	21.4	20.9	7.5	11.3
Columbia	23.2	22.7	7.5	13.2
Spartanburg ..	23.6	23.1	7.5	13.5

Note—Dealer contracts for gasoline are written at 2½ cents over the posted tank car price. Kerosene 1 cent off tank wagon for 25 gallons or more under contract except New Jersey and Baltimore, Md.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
N. Orleans, La.	20.8	18.9	*7 5	†12.0
Baton Rouge ..	20 0	19 5	6.5	†13 0
Alexandria	20.9	20.4	*7.5	†12 0
Lafayette	21.1	20.6	*7 5	†12.0
Lake Charles .	21 0	20 5	*7 5	†12 0
Shreveport	18 8	18.3	6 5	†12 0
Knoxville, Tenn.	24.2	23.2	8 5	13.5
Memphis	22.6	22.1	8.5	11.0
Chattanooga ..	23.0	22.0	8.5	12.0
Nashville	23.5	22.5	8.5	11.0
Bristol	24.1	22.5	8.5	14.0

*Includes city tax of 1 cent. †Louisiana kerosene prices include 1-cent state tax.

Effective June 2, 1933, station prices fixed at 7 cents above basic tank car price at key refining points in territory. Commercial consumers for tank wagon delivery pay following amounts over tank car price basis yearly deliveries:

1,000 to 75,000 gallons	2.5
75,000 to 300,000 gallons	1.5
Over 300,000 gallons	1.0

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA*

	Gasoline			Kero.
	Tank truck†	Posted retail	Incl'ds tax	tank wagon
San Francisco .	17.0	20.0	4.5	12.5
Los Angeles ..	16.5	19.5	4.5	12.5
Fresno, Calif. .	18.0	21.0	4.5	14.0
Reno, Nev.	20.5	23.5	5.5	15.5
Phoenix, Ariz. .	16.5	21.5	6.5	‡16.0
Portland, Ore. .	19.5	22.5	5.5	13 5
Seattle, Wash..	19.5	22.5	6.5	13.5
Tacoma	19.5	22.5	6.5	13.5
Spokane	22.5	25.5	6.5	14.0

*Retail prices posted by Standard Stations, Inc., a subsidiary.

†Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 1 cent. ‡Includes 5-cent state tax.

New York and Part of New England District

STANDARD OIL CO. OF NEW YORK

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Albany, N. Y. .	17.1	18.1	4.5	9.5
New York	17.0	18.0	4.5	8.5
Buffalo	17.7	18.7	4.5	9.5
Rochester	17.8	18.8	4.5	9.5
Syracuse	17.6	18.6	4.5	9.0
Boston, Mass. .	17.0	18.0	4.5	8.5
Augusta, Me. .	18.5	19.5	5.5	9.0
Manch'tr, N. H.	19 2	20.2	5.5	8.5
Burlington, Vt..	19.8	20.8	5.5	9.0

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Philadelphia, Pa.	14.5	15.0	4.5	10.0
Pittsburgh	17.0	18.0	4.5	10.0
Allentown	17.0	18.0	4.5	10.0
Erie	17.0	18.0	4.5	10.0
Scranton	17.0	18.0	4.5	10.0
Altoona	17.0	18.0	4.5	10.0
Dover, Del. ...	17.0	18.0	4.5	10.0
Wilmington ...	16.0	15.0	4.5	10.0
Boston, Mass. .	17 0	18 0	4.5	8.5
Springfield ...	17.6	18 6	4.5	8 5
Worcester	17.5	18.5	4.5	8.5
Hartford, Conn.	16 4	17 4	3.5	8.5
New Haven	16 2	17 2	3.5	8.5
Providence, R.I.	16 0	17 0	3.5	8.5

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Denver, Colo. .	19.0	21.5	5.5	12.5
Pueblo	19 0	21 5	5 5	13 0
Grand Juctn. ..	21 0	23.5	5.5	15.0
Casper, Wyo. ..	19.5	22.0	5.5	11.0
Cheyenne	18.0	20.5	5.5	13.0
Butte, Mont. ..	21 0	23 5	5 6	17 5
Billings	23.0	25.5	6.5	16.5
Helena	23.0	25 5	6.5	17.5
Great Falls ...	22.5	25.0	6.5	17.5
Salt Lake, Utah	22 0	24.5	5 5	16 0
Boise, Idaho ..	23.0	25.5	6.5	13.0
Twin Falls	23.0	25.5	6.5	13.0
Albu'que, N. M.	19.5	22.5	*7.5	13.0

*One-cent city tax.

Effective June 1, 1933, dealers and lease and license accounts will receive 2½ cents discount on regular gasoline in Montana, Colorado, Wyoming, Utah and Idaho.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Ohio points ...	17.0	18 0	5.5	*12.5

*Includes state tax of 1 cent, effective July 22.

Canada*

IMPERIAL OIL, LTD.
Imperial 3-Star Gasoline

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Hamilton, Ont.†	26.5	27 5	6.0	17.5
Toronto, Ont.†	26 5	27.5	6.0	17.5
Brandon, Man.*	31 0	34 5	7.0	22.5
Winnipeg, Man.	28.0	31.5	7.0	19.5
Regina, Sask.	31 0	35 0	6.0	23.5
Saskatoon, Sask.	33.0	37.0	6 0	25 5
Edmonton, Alta.	31 5	35.5	6 0	24 5
Calgary, Alta. .	28.0	32 0	6.0	21.0
Vanc'ver, B. C.†	30.0	31.0	7.0	24.0
Montreal, Que.	24 0	27 0	6.0	17.0
St. Johns, N. B.	26 5	30.5	7.0	21.0
Halifax, N. S..	25.5	29.5	6.0	21.0

*Imperial gallon used in Canada. †Dealer discount posted tank wagon on gasoline in Ontario and British Columbia subject to dealer's discount of 3 cents per gallon.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Omaha	18.8	19.8	6.5	10.8
McCook	19.0	19.0	5 5	10.0
Norfolk	19.3	20 3	6 5	11 3
N. Platte	20.3	21 3	6.5	10.5
Scottsbluff	19.8	19.8	5.5	11.0

Note: Discount to dealers and AAA commissions. From service station price: Red Crown Ethyl and Standard Red Crown gasoline, 3 cents. Reliance (third grade) gasoline, 2 cents. Rentals under lease and agency agreement, one-half cent per gallon additional.

Discount to consumers under contracts (large consumers under contracts and governmental units): On tank wagon deliveries of gasoline on monthly purchases of 100 gallons, or yearly purchases of 6,000 gallons, from the service station price: Red Crown Ethyl and Standard Red Crown Gasoline, 2 cents per gallon; Reliance (third brand) gasoline, 1 cent per gallon.

Retail Price Changes

Regular-Grade Gasoline and Kerosene

Standard Oil Co. of New Jersey October 22 advanced the service station price of gasoline in Parkersburg 2½ cents.

Standard Oil Co. of Louisiana October 18 reduced the service station price of gasoline in Bristol .6 cent. October 23 it reduced the service station price of gasoline in New Orleans 1 cent and October 24 it made a further reduction of 1.3 cents.

Standard Oil Co. of Nebraska October 23 advanced the tank wagon and service station price of gasoline .6 cent in McCook.

Atlantic Refining Co. corrects its previously reported price changes for gasoline in Wilmington, Del. October 14 it reduced the tank wagon price 1 cent and the service station price 2 cents in that city. October 16 it reduced both tank wagon and service station prices 1 cent.

Standard Oil Co. of Kentucky October 1 reduced the tank wagon and service station price of gasoline one-half cent in Atlanta. October 3 it made the same reduction in Augusta. October 11 it reduced the tank wagon and service station prices in gasoline 1 cent in Covington.

Accurate Control of Mud Prevented Big Water Flow

An interesting example of mud control was demonstrated recently at Associated Oil Co.'s No. 1 Williamson at Lost Hills, California. At approximately 4,600 feet the bit penetrated a badly fractured shale which produced salt water at an estimated rate of 50,000 bbls. per day. In combating this salt water flow it was found necessary to maintain accurate control of both the weight and the viscosity of the drilling mud. If the weight fell below 108 pounds per cubic foot the pressure of the salt water would blow the mud from the hole; if the weight exceeded 115 pounds per cubic foot considerable mud would be lost into the formation.

Likewise the viscosity of the mud in this well had to be closely controlled. If the viscosity went much lower than 30 centipoises this indicated that there was insufficient colloidal matter to seal up the fractured zone, and a gradual loss of fluid resulted. If the viscosity became greater than 40 centipoises there was danger of a swabbing action upon the withdrawal of the drill stem and tools, which would in turn cause a breaking down of the mud wall in the fractured zone, accompanied by the salt water flow.

The mud weights and viscosities were kept within these narrow limits by properly blending Baroid Nos. 0 to 3 at the well. Baroid No. 0 was used when an increase in weight with a minimum increase in viscosity was desired. Baroid No. 3 gives a higher increase in viscosity for the same increase in weight. Mud weights were determined by the use of a Braun "Mud Wate" hydrometer, and the viscosities were measured with a Stormer viscosimeter.

By this careful blending of the Baroid the operators were successful in preventing and controlling the large salt water flow. It was necessary to maintain these weights and viscosities until the 11¾-inch casing was set and cemented at a total depth of 6,041 feet.

Tank Car Markets in Chicago Firm and Improved Conditions Are Expected

By SPECIAL CORRESPONDENT

CHICAGO, Oct. 30.—Despite a slow rate of orders from the jobbing trade and a correspondingly retarded rate of movement of gasoline and other products from refineries, tank car petroleum markets were firm as the week opened and the tone was sufficiently healthy to justify the feeling of encouragement generated from the interchange of views of the sessions of the American Petroleum Institute's annual meeting. Actual prices were almost unchanged.

The whole trade appears to be on the alert, waiting for developments strengthening the price structure of gasoline and perhaps other refined products. The fact that markets have held firm in the face of the sluggish state of actual business is considered favorable. Great things are expected here from the curtailment of refinery operating rates, scheduled to go into effect in the next few weeks. It is widely asserted that this will close the last door against possible demoralization of the markets. Up to this time less progress has been made in curtailing refining activities than in curtailing crude oil production.

Little Offered

As the week opened, comparatively little full-specification gasoline was being offered by refiners on a shaded basis, and quoted prices were being generally observed. With only a month to go before reaching the December 1 date for minimum prices recently established, refiners were wary of too free quoting of motor fuel or any other product except for prompt shipment. Still jobbers remained rather inactive buyers and did not care to overextend themselves. With the passing of the month-end, however, it was expected jobbers might loosen up in buying a little. Many jobbers, due to gasoline tax laws, prefer to receive as little gasoline as possible before the first of the month.

Gasoline consumption, of course, is receding and this is theoretically an unfavable factor. However, it appears to have been quite well discounted in this case. Tourist traffic has dwindled down to a low level and the gallonage now current in the Middle West must be considered on about a normal basis. Such business, according to the most trustworthy reports, is making a good showing.

With continued firmness in natural gasoline, the high gravity refinery products are subjects of more interest than in some time, and are holding in better price relationship to regular grades. A growing portion of the trade appears to believe that more and more emphasis is going to be placed on high volatile gasolines in the future. High octane gasolines, of course, are taking their share of the total business and the tank car prices on these materials are sufficiently firm.

Better Support Given

The tank car market is being accorded somewhat better support from the tank wagon and service station price structure. While scattered price cutting continues in numerous regions, as a whole it is not proving to be as great a problem as many feared. In this connection the regional, state and district code-enforcement organizations in the central states are being kept busy investigating complaints of code violations. Most of these appear to have to do with price cutting in some form or other. The Illinois code committee, as an example, started operations with one stenographer and now it needs the services of half a dozen. This does not necessarily imply that the code is not being observed, but it does mean that there are a good many irregularities and misunderstandings.

Kerosene

Kerosene has been quiet and dull. It is marking time, and prices are about steady. Late plowing has been going on to some extent in various regions.

Furnace Oils

The burning oils have been firm. Freezing weather in the north is turning trade attention in that direction and distributors are keeping their tanks full to guard against the coming of some preseason cold snap. Refiners have found varied and spotty conditions in this market, but as a whole it has a good tone, straight through the list from the light distillates to the heavy zero fuels.

Heavy Fuels

Heavy fuels show a firm position, based partly on the strong position of crude and partly on the fact that industrial plants in general are enjoying a moderate volume of business requiring a fair rate of plant operations. Much interest is being shown on the proposed classifications of fuels for cracking and burning purposes under the fixed-price schedule of the oil administration. It is contended widely that important modifications will be necessary.

Naphthas

Naphthas and solvents remain quiet and little changed in price. Demand is along routine lines, with no feature noted.

Lubes, Wax

Lubricants are firm. Prices in this region have not been changed to any great extent, but it is generally conceded these items will be able to hold their own or improve. Wax remains the outstanding strong material, with stocks in this region extremely low and demand good.

Coke is quiet, and in fairly good demand.

California Crude Oil Prices

STANDARD OIL CO. OF CALIFORNIA
(Effective September 6, 1933)

For current purchases of crude oil at the well (unless otherwise specified). (All gravities above those quoted take highest price offered in that field.)

Gravity—	Long Beach	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier La Habra	Montebello	Santa Fe Springs	La Habra-Coyote	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills	Coalinga	Coyote
14-14.9	$.65	$.65	$.65	$.65	$.65	$.61	...	$.65	$.65	$.65	$.65	...	$.65	$ 57	$.57	$.57	$.65
15-15.9	.65	.65	.69	.69	.68	.69	...	.66	.65	.65	.65	...	.65	...	...	...	.65
16-16.9	.66	.65	.72	.73	.69	.73	...	.69	.67	.68	.65	...	.65	...	...	...	.65
17-17.9	.69	.65	.75	.76	.73	.76	...	.72	.70	.71	.65	...	.68	...	...	...	.68
18-18.9	.72	.65	.78	.80	.76	.79	...	.75	.74	.74	.65	...	.71	.61	.61	.59	.71
19-19.9	.76	.65	.81	.83	.80	.82	...	.78	.78	.78	.65	...	.74	.64	.65	.62	.74
20-20.9	.78	.68	.83	.87	.82	.85	...	.81	.82	.81	.66	...	.78	.67	.69	.65	.78
21-21.9	.81	.72	.86	.90	.87	.88	...	.82	.85	.84	.69	$.72	.81	.70	.73	.68	.81
22-22.9	.84	.76	.89	.94	.90	.92	...	.85	.89	.87	.73	.76	.84	.73	.76	.72	.84
23-23.9	.88	.81	.92	.97	.94	.95	$.83	.89	.93	.90	.76	.79	.87	.77	.79	.75	.87
24-24.9	.91	.85	.95	1.01	.97	.98	.86	.92	.97	.93	.80	.83	.90	.81	.82	.78	.90
25-25.9	.94	.89	.98	...	1.00	1.01	.90	.95	1.00	...	.85	.87	.93	.85	.85	.81	.93
26-26.9	.97	.93	1.01	...	1.04	1.04	.94	.98	1.04	...	.89	.90	.96	.89	.88	...	.96
27-27.9	1.00	.98	1.04	...	...	1.07	.97	...	1.08	...	...	.94	.99	.93	.91	...	.99
28-28.9	1.03	1.02	1.07	...	...	1.10	1.01	...	1.11	...	...	.98	1.02	.97	.94	...	1.02
29-29.9	1.06	1.05	1.09	...	...	...	1.04	...	1.15	...	...	1.01	1.05	1.01	.97	...	1.05
30-30.9	1.09	1.10	1.12	...	...	...	1.08	...	...	...	...	1.05	1.09	1.05	1.00	...	1.09
31-31.9	...	...	...	...	...	...	1.12	...	...	...	...	1.08	1.12	1.09	...	...	1.12
32-32.9	...	...	...	...	...	...	1.15	...	...	...	...	1.12	1.15	1.13	...	...	1.15
33-33.9	...	...	...	...	...	...	...	...	...	...	...	1.16	1.18	1.17	...	...	1.18
34-34.9	...	...	...	...	...	...	...	...	...	...	...	1.19	1.21	...	...	...	1.21
35-35.9	...	...	...	...	...	...	...	...	...	...	...	1.23	...	...	...	...	...
36-36.9	...	...	...	...	...	...	...	...	...	...	...	1.26	...	...	...	...	...
37-37.9	...	...	...	...	...	...	...	...	...	...	...	1.30	...	...	...	...	...
38-38.9	...	...	...	...	...	...	...	...	...	...	...	1.34	...	...	...	...	...

Additional Standard Oil Quotations

Elwood Terrace—F.o.b. ship, 33 degrees, $1.03; 34 degrees, $1.06; 35-35.9, $1.09; 36-36.9, $1.12; 37 degrees and over, $1.15.

Newhall—14 degrees and over, 57 cents.

McKittrick and Kern River—14 degrees and over, 57 cents.

Wheeler Ridge—14 to 17.9 degrees, 57 cents; 18-18.9, 58 cents; 19-19.9, 61 cents; 20-20.9, 64 cents; 21-21.9, 67 cents; 22-22.9, 70 cents; 23-23.9, 73 cents; 24-24.9, 76 cents; 25 degrees and over, 79 cents.

Kettleman Hills—32-32.9 degrees, 93 cents; 34-34.9, 96 cents; 35-35.9, 99 cents; 36-36.9, $1.02; 37-37.9, $1.05; 38-38.9, $1.08; 39 degrees and over $1.11.

The Texas Co. posted in Shiel Canyon, South Mountain and Santa Paula as follows: 14 to 17.9, 57 cents; 3 cents added for each degree up to and including 26-26.9 degrees at 84 cents; then 4 cents added for each degree up to and including 30 degrees and over at $1.

Company posts Standard Oil Co.'s Montebello prices in Montebello and North Whittier, and posts Standard Oil Co. prices in Signal Hill, Alamitos Heights, Huntington Beach, Torrance, Richfield and Santa Fe Springs, all effective September 6.

General Petroleum Co. posts Standard Oil Co. prices in Athens, Rosecrans and Signal Hill; Alamitos Heights up to 26-26.9; Santa Fe Springs up to 25-25.9; Richfield up to 25-25.9; Brea Canyon and Olinda up to 25-25.9, and Torrance up to 25-25.9.

Union Oil Co., effective September 6, posts same prices as Standard Oil Co. in all fields in which both purchase, excepting that in Athens-Rosecrans, Union Oil Co. posts 21-21.9, 72 cents, and 32-33.9, $1.18; 34-34.9, $1.21, and 35-35.9, $1.24.

Associated Oil Co., effective September 6, posted same prices for the same grades as Standard Oil Co. of California, excepting that in some fields its gravity scale stops as follows: Huntington Peach, 26 degrees and over; Seal Beach and Alamitos Heights, 27 degrees and over; Coyote Hills, 33 degrees and over; Torrance, 25 degrees and over; Inglewood, 24 degrees and over; Santa Fe Springs, 35 degrees and over, Midway-Sunset, Elk Hills, Buena Vista Hills, 39 degrees and over. Also Associated pays 52 cents for oil of 11 to 13.9 gravity in McKittrick, Kern Front, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, and Coalinga.

Crude Oil Prices

(Continued from Page 29)

Lance Creek (Dec. 16, 1932)	.92
Poison Spider (Mar. 1, 1931)	.70
Hudson (June 2, 1931)	.65
Lander (Mar. 5, 1931)	.40
Rex Lake (Feb. 23, 1930)	1.10
Osage (Jan. 18, 1933)	.52
Lost Soldier (Sept. 30, 1933)	.88
Hamilton Dome (Dec. 16, 1932)	.35
Torchlight (Sept. 29, 1933)	1.18
Greybull (Sept. 29, 1933)	1.18
Pendera	1.15
Sunburst (Sept. 29, 1933)	1.35
Cat Creek, Montana	1.07
Hogback (Sept. 29, 1933)	1.11
Lea County, N. Mex. (Sept. 29, 1933)	.70
Maljamar (Sept. 29, 1933)	.70
Artesia-Jackson (Sept. 29, 1933)	.70

Note—Salt Creek, Torchlight, Elk Basin, Grass Creek, Frannie, Greybull, Hogback and Iles by Stanolind Oil & Gas Co. Elk Basin, Grass Creek light, Big Muddy, Rock Creek and Sunburst by Ohio Oil Co. Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Lea County, effective September 29, by Humble Oil & Refining Co. and other buyers; Fort Collins, Wellington, Orchard, Florence, Big Muddy, Cat Creek, Rattlesnake and Table Mesa by Continental Oil Co. Osage posted by Arro.

*Continental Oil Co.

North Louisiana and Arkansas

Smackover, Ark (all grades)	$.70
Urania, La. (Oct. 3, 1933)	.75
Nevada, Ark. (Sept. 29, 1933)	.60
East El Dorado (Sept. 29, 1933)	.70
Other fields	(See gravity table)

Note—Smackover: Effective September 29, 1933, Texas Co., Magnolia Petroleum Co., Standard of Louisiana, Louisiana Oil Refining Corp., Gulf Refining Co. and Phillips Petroleum Co. East El Dorado posted by Magnolia Petroleum Co. and Gulf Refining Co., Nevada by Standard Oil Co. of Louisiana. Urania posted by H. L. Hunt, Inc., and Louisiana Oil Refining Co.

Eastern States

TIDE WATER PIPE CO.
(Effective October 4, 1933)

Bradford, Pa.	$2.45
Allegany, N. Y.	2.46

SOUTH PENN OIL CO.
(Effective October 4, 1933)

Pennsylvania Grade Oil in National Transit Lines (Bradford Field)	$2.45
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.12
Penna Grade Oil in Eureka Pipe Line Lines	2.07
Penna Grade Oil in Buckeye Pipe Line Lines	1.92
Corning Grade Oil in Buckeye Pipe Line Co.'s lines (Oct. 2, 1933)	1.32

PENNZOIL CO.
(Effective October 4, 1933)

Pennsylvania Grade Oil in National Transit Lines:	
Group A (Includes Cochran, Franklin, Hamilton and Doolittle districts.)	$2.37
Group B (Includes Titusville district.)	2.36
Group C (Includes Turkey and Tidioute districts.)	2.35
Group D (Includes Bear Creek and Porkey districts.)	2.34
Group E (Includes Edeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Jameson, Kennerdell, Emlenton, Tiona, Lacy and Kinzua districts. Price depends on length of pipe line haul to plant at Oil City.)	2.32

PURE OIL CO.
(Effective October 4, 1933)

Cabin Creek, W. Va.	$2.17
Bradford Hollow, W. Va.	2.17
Kelly Creek, W. Va.	2.17

Middle Western States

OHIO OIL CO.
(Effective September 29, 1933)

Lima	$1.30
Illinois	1.33
Princeton, Ind.	1.23
Plymouth	Shut in
Western Kentucky	1.18
Midland, Mich. (Sept. 30, 1933)	1.02
Oceana, Mich. (Oct. 5, 1933)	.90
Somerset, Ky. (Sept. 30, 1933)	1.23
Hart County, Ky. (Oct. 1, 1933)	1.18

*Posted by Pure Oil Co. Producers Pipe Line Co. pays 5 cents per barrel over Pure Oil Co.'s posted price. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and posted price includes premium. Hart County, Kentucky, crude purchased by Stoll Refining Co. Oceana posted by Old Dutch Refining Co. and Naph-Sol Refining Co.

Canada

Ontario (September 9, 1933):	
Petrolia*	$2.10
Oil Springs*	2.17
Turner Valley (September 11, 1933):†	
Clear naphtha	$3.50
Discolored naphtha	3.36
Crude oil, 50 gravity	3.93
Crude oil, 45 to 49.9	2.36
Crude oil, 40 to 44.9	1.61

*Imperial Oil, Ltd. †Imperial Oil, Ltd., and Regal Oil & Refining Co.

Mexico

Panuco*	$.466

*F.o.b. ship, based on August transactions and exclusive of production and export taxes and bar dues.

Late Fields

OKLAHOMA

Amerada Petroleum Corp.'s No. 2, C NE NW SW Section 33-7-4, South St. Louis area, flowed 4,453 bbls. on the third day, after producing over 10,900 bbls. in the first 48 hours. The same company acidized its No. 2, NE NE NW Section 6-6-5, Sacred Heart area in Pottawatomie County and it responded with a production of 2,162 bbls. of oil and 125 bbls. of water. It is producing from pay at 4,068-4,101 feet. Both wells are producing from dolomite.

The Continental Oil Co.'s No. 1 McConnell in Section 28-17-4w, Crescent area, Logan County, was tested out on Tuesday. Its hour's production was 337 bbls. It is believed to be as good a well as the Carter-Gypsy well, just north of it which made over 5,700 bbls. in a one-day test.

In the Oklahoma City Field, the Indian Territory Illuminating Oil Co.'s No. 3, C NW SW NW Section 26-11-3w, produced 2,141 bbls. in four hours from Wilcox sand at 6,505 feet, drilled in 8 feet, and the same company's No. 6, C NE SE NE Section 27-11-3w, made 343 bbls. in 3 hours and 20 minutes from Wilcox sand at 6,546 feet, total depth 6,624 feet.

Gilcrease and others' No. 1 Parnacher, NE SW NW Section 5-3-7, Pontotoc County, was dry and abandoned at 1,304 feet.

Gypsy Oil Co. has made a location for a test, No. 1 Kelly, NE cor. Section 10-1n-20w, in Jackson County, southwestern Oklahoma.

EAST TEXAS

FORT WORTH, Tex., Oct. 31.—Engineers for Tide Water Oil Co. recommended to Texas Railroad Commission that wells in the Long Lake Field, Anderson County, be drilled 933 feet apart. This recommendation was accepted.

FORT WORTH, Tex., Oct. 31.—Shell Petroleum Corp. and others' No. 1 Beggs in Carter Survey, Leon County, cored 5,743-46 feet, recovered 1 foot black sandy shale; cored 5,746-53 feet, recovered 2½ feet calcareous shale and 3½ feet black shale. It is coring ahead at 5,357 feet.

MICHIGAN

MUSKEGON, Mich., Oct. 31.—James Flanagan's No. 5 E. Mitchell, NE SE Section 36-15n-17w, Hart Township, was brought in as the seventh commercial producer in the upper Traverse formation in Oceana Field, today. H. C. Nelson's No. 2 A. Doolittle, north offset to No. 5 Mitchell in same quarter section, is drilling in today. No. 5 Mitchell is estimated good for 100 bbls. or more daily after acid treatment started today. No. 4 Mitchell, one location east, is good for similar production after treatment last week.

MICHAEL J. DELANEY ELECTED

Michael J. Delaney, president Texas, Louisiana and New Mexico Drilling Contractors Association, Dallas, was chosen president of a new organization that was formed in Chicago during the convention, the National Drilling Association. Thomas D. Phillips of Tulsa, member of the firm of Mead & Phillips Drilling Co., was elected executive secretary-treasurer. He is also secretary of the Oklahoma-Kansas Drilling Contractors Association. Presidents of all state drilling associations will become members of the directorate of the national organization automatically.

M. F. WESTOVER DEAD

Myron F. Westover, 73, who retired in 1928 after having been secretary of the General Electric Co., 34 years, died in his home in Schenectady, N. Y., October 21. In 1888 Mr. Westover became secretary to Charles A. Coffin, then treasurer and manager of the Thompson-Houston Electric Co., a predecessor of the General Electric Co. In 1893 he was elected assistant treasurer of the new General Electric Co. and the next year secretary.

Skelly Oil Co. and Lewis Production Co. Buy Favored Oil Leases in Osage

The Osage lease sale held in Pawhuska on Monday, October 30, was featured by sharp bidding and good prices for three quarter sections in or near the so-called Naval Reserve area.

The Lewis Production Co. paid $71,000 for the SW Section 10-24-7, and Skelly Oil Co. paid $66,000 for the NW Section 28-24-7, and $36,000 for the SE Section 16-25-6.

The SW Section 10-24-7, purchased by Lewis Production Co. is north of a Producers & Refiners productive lease in Section 15. The NW Section 28-24-7, purchased by Skelly Oil Co. is west of Lewis Production Co. productive lease and south of another belonging to the Lewis company.

The SE Section 16-25-6, also bought by Skelly Oil Co., is close to productive wells of the Producers & Refiners Corp. in Sections 15, 21 and 22.

Most of the leases offered went at big bargain prices. Following is the list of leases sold:

Tract No.	Description—	Acres	Purchaser—	Bonus
1	SW 10-21-12	160	W. C. Elliott, Tulsa	$50
2	NE 30-27-12	160	E. C. Lawson, Tulsa	50
3	NW 30-27-12	160	E. C. Lawson, Tulsa	50
4	SE 30-27-12	160	E. C. Lawson, Tulsa	50
5	SW 30-27-12	160	E. C. Lawson, Tulsa	50
6	SW 27-22-11	160	H. A. Branstetter, Skiatook	50
7	NE 28-22-11	160	H. A. Branstetter, Skiatook	50
8	NE 33-22-11	160	Passed.	
9	SW 23-22-11	160	Norbla Oil Co., Tulsa	50
10	NE 2-24-11	160	Passed.	
11	SE 20-27-11	160	National Refining Co., Coffeyville	125
12	NW 21-27-11	160	J. D. Engle et al, Tulsa	50
13	SW 29-25-11	160	J. S. Dewar, Bartlesville	50
14	SE 30-25-11	160	J. S. Dewar, Bartlesville	125
15	NE 31-25-11	160	J. B. Milam, Chelsea	275
16	NW 32-25-11	160	J. S. Dewar, Bartlesville	250
17	SW 27-20-10	160	Norbla Oil Co., Tulsa	50
18	NE 25-20-10	160	Norbla Oil Co., Tulsa	50
19	Fr. NE 29-20-10	61.65	Norbla Oil Co., Tulsa	100
20	Fr. W½ 29-20-10	68.08	Norbla Oil Co., Tulsa	150
21	SE 29-20-10	160	Norbla Oil Co., Tulsa	350
22	SE 22-25-10	160	H. M. Mosher, Nowata	50
23	SW 22-25-10	160	H. M. Mosher, Nowata	50
24	NE 27-25-10	160	H. M. Mosher, Nowata	50
25	NW 27-25-10	160	H. M. Mosher, Nowata	50
26	NE 4-20-9	160	Passed.	
27	Fr. NW 4-20-9	71.96	Passed.	
28	Fr. SE 4-20-9	55.31	Passed.	
29	NE 6-21-9	160	National Refining Co., Coffeyville	225
30	NW 6-21-9	160	Passed.	
31	SE 6-21-9	160	National Refining Co., Coffeyville	175
32	SW 6-21-9	160	Passed.	
33	NE 9-21-9	160	C. F. Bissett, Tulsa	100
34	NW 10-21-9	160	Passed.	
35	NE 11-21-9	160	W. C. Elliott, Tulsa	150
36	SE 11-21-9	160	W. C. Elliott, Tulsa	150
37	NE 20-21-9	160	Ohio-Osage Oil Co., Tulsa	300
38	NW 20-21-9	160	Charles R. Gray, Pawhuska	100
39	NW 35-21-9	160	Ohio-Osage Oil Co., Tulsa	450
40	SW 35-21-9	160	Ohio-Osage Oil Co., Tulsa	900
41	NW 26-23-9	160	Producers & Refiners, Norbla Oil Co..	200
42	SW 29-23-9	160	J. Garfield Buell, Tulsa	600
43	NE 32-23-9	160	J. Garfield Buell, Tulsa	900
44	NW 32-23-9	160	J. Garfield Buell, Tulsa	650
45	NW 22-24-9	160	Bay Oil Corp.	175
46	SW 1-26-9	160	Commercial Drilling Co., Tulsa	50
47	Fr. SW SW NW 23-21-8	105.20	F. W. Files, Pawhuska	250
48	NW 10-23-8	160	E. G. Todd, Cleveland	300
49	NE 4-24-8	160	F. W. Files, Pawhuska	400
50	NW 4-24-8	160	R. J. Barrett and J. W. Soderstrom, Pawhuska	400
51	SW 8-24-8	160	Champlin Refining Co., Enid	250
52	SE 18-24-8	160	Norbla Oil Co., Tulsa	50
53	NE 21-24-8	160	Elfred Beck	50
54	SW 22-24-8	160	Norbla Oil Co., Tulsa	350
55	SE 25-25-8	160	Passed.	
56	SE 33-25-8	160	C. T. Evertson, Pawhuska	125
57	SW 33-25-8	160	El Ray Oil Co., Tulsa	50
58	NE 36-25-8	160	Passed.	
59	SW 9-23-7	160	Champlin Refining Co.	5,600
60	NW 16-23-7	160	Champlin Refining Co.	4,900
61	SE 34-23-7	160	C. T. Matthews, Hominy	350
62	SW 34-23-7	160	Bay Oil Corp., J. R. Higgins	950
63	SE 1-24-7	160	Bay Oil Corp., J. R. Higgins	450
64	SW 10-24-7	160	Lewis Prod. Co., Tulsa	71,000
65	SW 13-24-7	160	Bay Oil Corp.	450
66	SW 13-24-7	160	Bay Oil Corp.	1,300
67	NE 19-24-7	160	Champlin Refining Co.	2,500
68	NW 28-24-7	160	Skelly Oil Co., Tulsa	66,000
69	NE 33-25-7	160	C. R. Gray	675
70	NW 33-25-7	160	Champlin Refining Co.	1,600
71	SE 33-25-7	160	Bay Oil Corp.	2,100
72	SW 33-25-7	160	Lewis Prod. Co.	4,000
73	NE 2-25-6	160	Norbla Oil Co.	550
74	SW 8-25-6	160	Phillips Petroleum Co.	5,100
75	SE 10-25-6	160	Norbla Oil Co.	7,500
76	SE 16-25-6	160	Skelly Oil Co.	36,000
77	NW 21-25-6	160	A. H. Kastaihka, Inc.	2,500
78	NE 22-25-6	160	Champlin Refining Co.	4,900
79	SE 14-26-4	160	Olson Drilling Co., Tulsa	50
80	NE 23-26-4	160	Olson Drilling Co., Tulsa	50
81	NW 24-26-4	160	Olson Drilling Co., Tulsa	50
		12,522.20		$227,600

OLINDA-BREA CANYON PRICE

WASHINGTON, D. C., Oct. 30.—Secretary Ickes has corrected a mistake in the price set for 17-17.9 gravity crude petroleum from the Olinda-Brea Canyon Field in California to 77 cents instead of 74 cents as stated inadvertently in the order fixing oil prices effective December 1, 1933.

FLORENCE TO AUGUSTA

EL DORADO, Kans., Oct. 28.—A new 6-inch line of Sinclair Prairie Pipe Line Co. is being laid from the old Florence Field in Marion County to Augusta, Butler County, to connect with the main pipe line. This is to replace an old line, laid there 12 years ago and was leaking some. Truman and Smith of El Dorado have gangs of men on the job.

H. W. ROBERTS DIES

WICHITA FALLS, Tex., Oct. 30.—Herbert W. Roberts, 38, president of Falls Refining Co. of Wichita Falls, died at his home in Dallas Monday morning at 2:30 o'clock. Mr. Roberts also was president of Beacon Oil & Refining Co. and Pine Petroleum Co. of Henderson, Tex.

He is survived by his wife and four children.

I.P.A. Will Convene in Tulsa on Nov. 12-13

The Independent Petroleum Association will hold its annual convention in Tulsa on Monday, November 13, with preliminary committee meetings on the preceding day. The convention sessions and the banquet in the evening will be in the Mayo Hotel. The complete program of addresses in the evening has not yet been decided upon.

The Monday morning session will be taken up in the reading of reports of officers and committees and the afternoon session will be devoted mainly to the election of a board of directors. The nominating committee is made up of Jake Hamon, Ardmore, Okla., chairman; Alvin Richards, Pure Oil Co., Tulsa; Ralph Pryor, of Slick, Pryor & Lockhart, Inc., Wichita, Kans.; A. G. Oliphant, Tulsa, and J. S. Bridwell, Wichita Falls, Tex.

A large delegation is expected from Texas and the Rocky Mountain fields and Oklahoma and Kansas will be well represented.

It is said the membership of the Independent Petroleum Association numbers nearly 1,800, from 22 states.

Producers Optimistic on Present Price Schedules

(Continued from Page 9)

Oil Co., Tulsa, and K. Winship, Gypsy Oil Co., Tulsa.

The following five members were appointed by President Byles: J. D. Collett, O'Keefe & Collett Corp., Fort Worth; O. D. Donnell, Ohio Oil Co., Findlay; Wirt Franklin, Wirt Franklin Petroleum Corp., Oklahoma City; J. Edgar Pew, Sun Oil Co., Philadelphia, and L. P. St. Clair, Union Oil Co. of California, Los Angeles.

The executive committee fixed the dates for the fifteenth annual convention of the Institute as November 13 to 15 inclusive. The convention will be held in Dallas, Tex., with the Adolphus and Baker Hotels as headquarters.

Sluggish Market Attributed to the Price-Fixing Order

(Continued from Page 26)

draw a price of 85 cents to $1.05 a barrel depending upon its viscosity and source.

Lubricants and Wax

Neutrals and bright stock prices remained firm throughout the week. There were no general changes but consolidations have been made by eliminating certain high cold test material as a competitor for the winter motor oil market and the general structure now offers a chance for prices to advance along with any other major group of refinery products.

Wax featured the market again and was being tightly held at 3¾ cents.

DEATH OF FRED GARTHWAIT

Fred Eugene Garthwait, said to have been the oldest living oil well shooter, died in Wellsville, N. Y., recently at the age of 78 years. Mr. Garthwait began shooting in the Bradford Field in Pennsylvania in 1880, and was one of the first to shoot wells in the Allegany, N. Y., Field. He continued his work in that field for 27 years and then moved westward, shooting in Indiana, Kansas and Oklahoma. He was widely known in the nitroglycerin business. Garthwait was a careful, deliberate worker, possessing a wholesome respect for the idiosyncracies of the stuff he handled so often, and throughout his career no sensational incidents or narrow escapes occurred.

H. H. DEWEY DEAD

Herbert H. Dewey, vice president of the International General Electric Co., Inc., died in his home in Schenectady, N. Y., October 25 after a short illness. Graduated from St. Lawrence University in 1904, Mr. Dewey joined the General Electric Co. in 1907 as a student engineer and had been with the company since then.

Shell Test in Leon County Looking Like Well; Leasing Activity on Trend to Long Lake

By L. E. BREDBERG

DALLAS, Tex., Oct. 30.—The southern sector of the Woodbine sand producing district in East Texas continues to look more promising and due to the recent Long Lake Plantation strike of the Tide Water Oil Co. and Texas Seaboard Oil Co. leasing and royalty buying took a spurt which has not been seen in the area since the East Texas Field was discovered. Now a new well appears in the making. This is Shell Petroleum Corp. and others' No. 1 Beggs in the John Carter Survey near Centerville in Leon County, approximately 25 miles southwest of the discovery in Anderson County.

Shell Petroleum Corp. purchased a half interest in a block of approximately 17,500 acres surveyed by geophysical instruments and blocked for Penn Oil Co. and John R. Black, both of Dallas. Penn Oil Co. and Darby Petroleum Co. retained an eighth interest in the block. Humble Oil & Refining Co., Gardner Petroleum Co., Westland Oil Co., John Black and Frank Buttram hold the remaining interests in the block, which was taken in 1930 and unitized.

The owners drilled a former test on the Phillips land in the Swayze Survey. This test showed good saturations and was plugged back from total depth of 6,300 feet to make several tests, all of which proved unsuccessful and resulted in abandoning of the test. This location is approximately 2½ miles northwest of the present test, which is now a definite gasser and may prove an oil discovery when cored deeper.

Higher on Structure

The new test logged the top of the Woodbine series 380 feet higher on structure than the first test on the structure, which has made this test appear more encouraging. The sand was topped at 5,618-5,743 feet. Derrick floor elevation is 366 feet. Heavy gas was picked up at 5,743 feet, which caused the operating company, Shell Petroleum Corp., to shut it down and make a test to discover whether it would blow itself in as an oil well. This depth is 125 feet in the Woodbine, or around 275 feet higher than the level at which water was first logged in the first test on the block.

Two and a half inch tubing was swung at 5,665 feet and after washing the well for one and one-half hours the rock pressure built up to 200 pounds. It later increased to 1,300 pounds. The well gauged 12,000,000 feet of gas on tubing through a 1-inch and one eleven-sixteenths inch choke. On October 26 at 5 p.m. it flowed into the slush pit through eleven-sixteenths inch on tubing and through one 3-inch lead line. It rocked up 2,250 pounds pressure on the tubing but failed to make any oil. Several tests were made to check for oil production but none was successful. Tubing was then pulled and the gas killed with intention of taking another 5 feet of core—to 5,748 feet. The operators are coring ahead carefully to prevent passing up any saturated streaks that might produce if given a thorough testing, and to prevent drilling into salt water if possible.

The first test was made at 5,723 feet. It was then cored to 5,729 feet showing hard sand. From 5,729-34 feet it cored a tight sand carrying odor and taste of gas and distillate. From 5,734-39 feet was recovered 1 foot of hard sand with odor and taste of gas. From 5,739-43 feet it cored hard shale and sand lens, shutting down at the latter depth for the test.

The main formations in this test were logged as follows: Pecan Gap chalk, 4,074-4,153 feet; Austin chalk, 5,150-5,317 feet; the Woodbine was mentioned above. Elevation of No. 1 Phillips test, the first test on the structure, is 423 feet. The Pecan Gap was logged at 4,135-4,200 feet in that test, and Austin chalk from 5,225-5,560 feet. It cored the first sand at 6,054-68 feet, second sand from 6,146-50 feet.

Long Lake Well

The Long Lake discovery in southwest Anderson County topped the Pecan Gap chalk at 3,542 feet; base 3,654 feet. Elevation of this well is 227 feet. It cored Austin chalk from 4,612-4,962 feet and topped the Woodbine sand section at 5,147 feet.

Acreage in the intervening 25 miles between the two wells is bringing a premium, what little there is left open. Majors and independents alike have been leasing in this area and on the trend between the two tests for several months, several blocks having been assembled. Two tests are contemplated on acreage in the trend, immediately. Showers, Moncrief, E. L. Smith and others are planning to drill in the southwest quarter of the Alfred Penn Survey, and Mid-Kansas Oil & Gas Co. was reported planning a test on the J. M. Dixon land in the J. S. Boone Survey, 4½ miles southwest of the Long Lake well, in Leon County. The former proposed test is approximately 11 miles southwest of the Long Lake well, in Leon County. These tests will be exceptionally interesting due to their location on the trend, and will prove up whether the southern sector of the Woodbine sand district is to yield a field similar to Rusk, Gregg, Smith and Upshur Counties. The Long Lake area may not link up by production with the Shell-Beggs area but a series of pools may be opened on the trend.

Major companies have instrument parties checking all the counties in this part of the district, some of the companies purchasing checkerboard acreage or blocks on the strength of findings of the instruments.

Grisham & Hunter have leased around 6,000 acres of the Lula Sadler lands in northwest Anderson County, centering in the G.C.&S.F., D. P. Penn, B. F. Stamps and M. J. Fuller Surveys east of the Tide Water Oil Co.'s Cayuga block. A test is planned for this newly assembled block.

A test is planned for a 204-acre tract in the F. Ward Survey adjoining the Deitz 1,000-acre block on which Humble Oil & Refining Co. is drilling in Freestone County across the river from the Long Lake discovery. The Humble test is down 1,215 feet in shale making hole rapidly and promising to be the second test down in the area. It will be closely followed to note whether the pool will be extended northwest.

The Tide Water Oil Co. and Texas Seaboard Oil Co.'s No. 1 Monnig (Long Lake Plantation), discovery in Anderson County, is pinched to 5 bbls. per hour making 3.5 per cent salt water and 1 per cent b.s.

Assembling Blocks

Sun Oil Co. has taken a block 4 miles southeast of Maydelle in Cherokee County. Gulf Production Co. has taken checkerboard acreage on a southwest-northeast trend near Pure Oil Co.'s Maydelle block in the same county.

A block of 6,000 acres has been taken in Henderson County centering in the E. G. Sevier, C. W. Batton and J. Murchison Surveys.

The Long Lake block is now being shot again before making location for second test by the two companies which hold the 24,000 acres under lease, and next week location for their test will no doubt be announced.

J. K. Hughes has taken approximately 7,000 acres in a block 1 mile west of Cairo in Leon County, centering in the Eli Chandler, E. Jones and S. Cottle Surveys, and will drill a Woodbine sand test as soon as titles are cleared.

J. B. Daniels is to drill on a block centering in Round Prairie in Freestone County.

Two "boom" towns have sprung up near the Long Lake discovery in southwestern Anderson County. One has taken its name after the national recovery act and is called New Deal. The other is New Long Lake to distinguish it from the older village of Long Lake which is only a mile from the well. The usual oil field town buildings are being erected in both places preparing for the supposed "boom." If the Beggs gasser in Leon County is drilled into an oil discovery the unitized block held by the several companies and individuals will no doubt be developed with discretion although some of the leases taken on five-year contracts will have to be drilled before the fore part of 1935, time of their expiration, unless extensions are granted by the fee owners which is not the usual thing in such cases.

EAST TEXAS FIELD

Operators in this field continue to stake a good many locations and complete many new wells each week. Oncoming bad weather probably will be the only factor to cut down the drilling rate within a short time. There were 97 wells added to the list of producers this week, making a total of nearly 11,200 wells in the field to date. There were 90 locations staked.

Companies continue to purchase producing properties or contract for production from leases. However, there are few leases changing hands since the price is scheduled to go to around $1.17 on December 1, operators who have weathered the much lower prices of the past two years inclining to hold their properties and make up for what they possibly have lost in the past.

Cutting the production to 5.75 per cent of the daily hourly potential of the wells will curtail the field to around 395,000 bbls. on November 1. The daily allowable has not yet been worked out by the engineers of the Railroad Commission. The marginal well allowance will remain at 20 bbls. per well and under the new order many of the flowing pro-

(Continued on Page 41)

East Central Texas Wildcats

Week Ending October 30

Company, well, farm name, section and block—	Remarks:
ANDERSON COUNTY	
Standard of Kansas' No. 1 A. W. Johnson, 565 ft. from N line and 420 ft. from E and W lines of 22.8-ac. tract, Simon Sanches Sur.	Derrick.
Tide Water Oil Co. and Seaboard Oil Co.'s No. 1 Long Lake Plantation, 3,700 ft. due S of S cor. of Tom Reeves estate, 97-ac. tract, Simon Sanches Sur.	Flowing 5 bbls. per hr. through ⅝-in. choke on csg.; tubing closed; 5 per cent water.
ANGELINA COUNTY	
J. M. Seward et al's No. 1 L. J. Dearman, 500 ft. from S and W lines of Dearman S 20-ac. tract, 2½ miles SE of Zavalla, J. T. Peavy Sur.	Drlg. 452 ft.
BOWIE COUNTY	
R. W. Lynn and W. R. Rolfe's No. 1 Mrs. R. D. Hart, 330 ft. out of NE cor. of Hart 20-ac. tract, 1 mile E of Nash, Thomas Price Sur.	Location.
CHEROKEE COUNTY	
A. F. Richardson's No. 1 P. Wood, 660 ft. from N line and 3,300 ft. from E line of 498-ac. tract, 14 miles E of Jacksonville, on Cherokee-Rusk County line, Ignacis Sanches Sur.	Derrick.
ELLIS COUNTY	
Beckham et al's No. 1 L. S. R. Wood, 150 ft. from N line and 330 ft. from E line of Wood 186-ac. tract, A. D. Lagarsa Sur.	Derrick.
FRANKLIN COUNTY	
Van Emon et al's No. 1 O. S. Maxton, 910 varas W and 910 varas S of NE cor. of survey, John Brown Sur.	Derrick.
FREESTONE COUNTY	
Hughes et al's No. 1 H. A. Shaw, 330 ft. out of NE cor. of H. A. Shaw 138-ac. tract, Simon Sanches Sur. No. 5	Location.
Humble Oil & Refining Co.'s No. 1 Dietz Brothers, 1,000 ft. out of southerly SE cor. of 1,000-ac. tract, Simon Sanches Sur. No. 6	Spudding 100 ft.
GREGG COUNTY	
Clover Leaf Petroleum Co.'s No. 1 M. T. Cole, 209 ft. from N line and center of E and W lines of survey, A. Parks Sur.	Waiting on cmt. to set 3,525 ft.
Elliott et al's No. 1 Benson, 175 ft. from S line and center E and W lines of tract, W. P. Chisum Sur.	Location.
Glazier et al's No. 1 Bumpass, 710 ft. from S line and 7,690 ft. from W line of survey, W. H. Castleberry Sur.	Drlg. 2,800 ft.
Claude Lee's No. 1 Black, 1,650 ft. from S line and 1,650 ft. from E line of survey, H. R. Hokit Sur.	Spudding.
Magnolia Petroleum Co.'s No. 6 Clem Jones, 4,710 ft. from S line and 870 ft. from W line of survey, G. W. Hooper Sur.	Waiting on cmt. to set 3,639 ft.
Shoults' (receiver) No. 1 Williams, 900 ft. W and 90 ft. N of NE cor. of D. Dainwood Sur.	Drlg. 2,760 ft.
Sun Oil Co.'s No. 10 William Pentecost, 1,600 ft. from S line and 1,270 ft. from E line of survey, Mary Scott Sur.	Waiting on cmt. to set; T.D. 3,634 ft.
S. K. Vierson's No. 4-A Andy Givens, 680 ft. from S line and 134 ft. from E line of survey, R. W. Smith Sur.	Rig up.

(Continued on Page 42)

NEWS FOR PETROLEUM REFINERS

Two Concerns Appointed by Gray as Sales Agents

NEWARK, N. J., Oct. 30.—To handle the expanded field of licensing brought about by its enlarged scope of licensing rights for three clay treating processes, already in extensive commercial use, the Gray Processes Corp. has announced the appointment of Alco Products Co. and the M. W. Kellogg Co. as its exclusive sales agents. Both concerns are well known in the petroleum refining industry.

In July of this year the Gray Processes Corp. entered into licensing agreements with the Texas Co., Standard Oil Co. (Indiana), Pure Oil Co., and Standard Oil Development Co. By these agreements Gray obtained the right to grant licenses under the clay treating processes of the four companies. This involved an extended scope beyond that of the company's original activities with respect to the Gray process alone.

Gray's licensing rights now cover the three processes known in the industry as Gray, Osterstrom and Stratford, and include the clay treating developments of the four companies participating in the July agreements in addition to those of other licensees, among whom are the Atlantic Refining Co., Continental Oil Co. and the Sinclair Refining Co.

Plan Trinidad Oil Agency for Canadian Refineries

PORT OF SPAIN, Trinidad, Oct. 30 Formation of a central selling agency to facilitate the sale of Trinidad crude to Canadian refiners was suggested by Sir Claud Hollis, governor of Trinidad, in an address to the members of the institute of Petroleum Technologists. Speaking at the institute's annual dinner, Sir Claud said such an agency not only might strengthen the trade position but also would make it easier for the government to negotiate in behalf of the Trinidad oil industry.

Only a small percentage of Canada's oil requirements are at present supplied from Trinidad. Preliminaries looking to the formation of such an agency are understood to be under way.

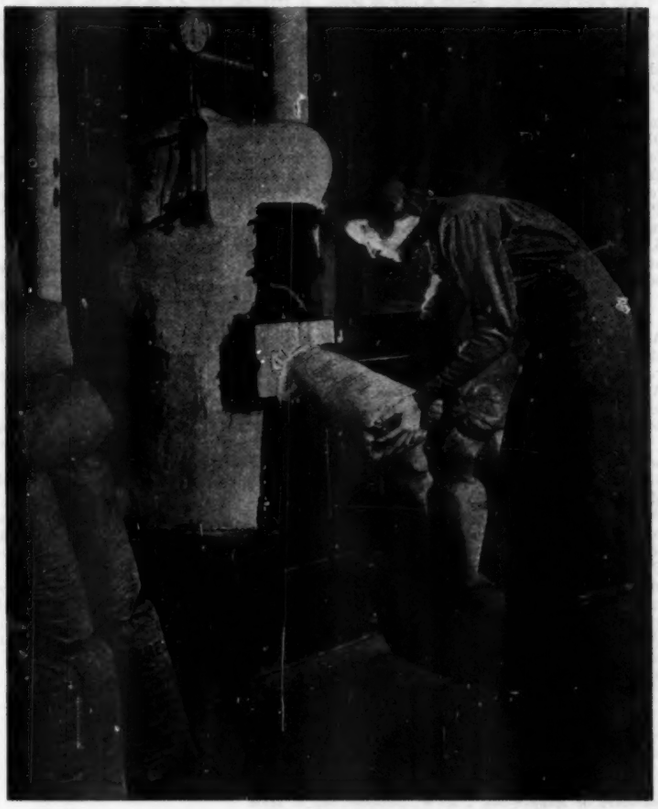
CHICAGO CLUB DINNER HOST

CHICAGO, Oct. 28.—The Chicago Chemists Club was host to over 100 oil chemists and technologists Wednesday, October 25, in the Stevens Hotel in connection with the American Petroleum Institute meeting. Dr. Gustav Egloff, president of the club and director of research of the Universal Oil Products Co., was chairman. The speakers were Prof. D. G. Keyes, University of Illinois; Prof. Walter F. Rittman, Carnegie Institute of Technology; Dr. R. E. Wilson, vice president of the Standard Oil Co. (Indiana); R. A. Halloran, vice president of the Standard Oil Co. of California; Dr. C. K. Francis, The Oil and Gas Journal; Dr. Louis de Florez, consulting petroleum engineer; Dr. K. G. MacKensie, Texas Co., and Dr. F. W. Sullivan, director of research, Standard Oil Co. (Indiana).

PEGASUS PETROLEUM FORMED

CLEVELAND, Ohio, Oct. 30.—The Pegasus Petroleum Products Co. has been organized and incorporated with a capital of 250 shares no par common stock, to establish and operate a plant here for the manufacture and distribution of refined petroleum products. Principals are George Ehrke, Bert D. Bradley and Faye Jenkins.

When the Furnace Needs Coke, Just Toss in a Sack



The drudgery of shoveling coke into the furnace when it needs feeding is eliminated by a device adopted by the Shell Oil Co., which has begun putting up coke in paper bags, each sack of coke weighing 20 pounds. Thus far this service has been introduced in St. Louis, Mo., only, but as its convenience and cleanliness are recognized, the sacking method is expected to be extended.

Group to Acquire British Subsidiary of Continental

The Continental Oil Co. is reported to be negotiating for the sale of its 90 per cent interest in the Sealand Petroleum Co., Ltd., a British marketing subsidiary. In England quotas are assigned to oil organizations, which are collectively known as "the combine." It is understood that the prospective purchasers are the Shell Trading & Transport Co., the Anglo-Persian Oil Co. and the Anglo-American Co., which is a subsidiary of the Standard Oil Co. of New Jersey.

The Sealand company, which has a capitalization of £100,000, was organized by E. W. Marland when he was the head of the Marland Oil Co., now the Continental Oil Co.

MAGNOLIA PLANT IS STARTED

HOUSTON, Tex., Oct. 30.—Construction work has been started on the Magnolia Petroleum Co.'s new solvent extraction plant at its Beaumont, Tex., refinery. Equipment is being added to process practically all of the company's motor oil output. The Duo-Sol process will be used. The design and engineering work are being directed by Max B. Miller & Co. as licensees of the process. Construction of a similar unit is also under contract for the Vacuum Oil Co.'s refinery in Paulsboro, N. J.

Sale of Inferior Gasoline Results in Receiverships

LONGVIEW, Tex., Oct. 30.—Eight East Texas refineries have been placed in receivership and one sold for failure to pay state gasoline taxes and refining of inferior motor fuel, according to Sam Kimberlin, supervisor in East Texas for the Texas Motor Fuel Tax Bureau.

One of the refineries was sold on the auction block to satisfy a large accumulation of unpaid taxes due the State.

Mr. Kimberlin indicated that all refineries failing to comply with the state requirements would be placed in receivership and kept there as long as possible.

"We apparently have about stopped sales of inferior motor fuel," Mr. Kimberlin said, "and now we are going out to collect every penny in gasoline tax due the State."

TO REBUILD TRIANGLE PLANT

The Southwestern Engineering Corp. has been awarded a contract to rebuild the Triangle Oil Co.'s 3,000-bbl. refinery in Venice, Calif., which was destroyed by fire October 9, 1933. This will include installation of a new Southwestern portable tube still, fractionating tower, cooling tower, etc. The Southwestern also received the contract for the fractionating column for the Walter Steiner refinery at Hynes, Calif.

Indiana Standard Payroll Takes Jump of $5,000,000

CHICAGO, Oct. 30.—Application of the NRA oil code to the operations of the Standard Oil Co. of Indiana, Edward G. Seubert, president, stated here, has resulted in abandonment of part-timing in refineries, working weeks have been shortened and jobs have been made, especially in the sales organization, for about 3,300 employes, involving an increase in payroll payments of $5,000,000 a year. In view of the success of the company's industrial relations plan in dealing with labor questions in refineries, Mr. Seubert said, a similar plan is being introduced in the sales organization so far as the scattered character of sales personnel will permit. Sales employes are at present choosing representatives on the committee which will handle their relations.

START GARBER REFINERY

The Omar Refining Co., formerly sales representative of the Garber Refining Co., has purchased the assets of the latter at a bankruptcy sale and now has workmen on the ground to rehabilitate the 4,500-bbl. refinery at Garber, Okla. The plant has been idle about one year. Joe and Fred Whitaker of Tulsa are the principal owners in the Omar Refining Co. and they expect to have all construction work incident to starting the plant completed by the end of the first week in November. About the middle of November the company expects to resume operations on a normal basis and contemplates running about 2,500 bbls. of local crude daily.

OIL CODE GIVES MANY JOBS

NEW YORK, Oct. 30.—The Standard Oil Co. of New Jersey reports that since adoption of the oil code its domestic subsidiaries have added 1,250 employes, at an increased wage and salary cost of $1,333,000 annually.

CONTRACT LET FOR NEW DOCKS

HOUSTON, Tex., Oct. 30.—Pan American Refining Co. has let the contract for construction of its new docks at Texas City to the Austin Bridge Co. of Dallas, Tex. The docks will be built of creosoted timber with reinforced concrete decking on the piers and will have berthing facilities for two tankers and one barge.

MID-WEST BUILDING REFINERY

The Mid-West Refining Co., headed by B. J. Skinner, formerly of the Wolverine Oil Co., of Grand Rapids, Mich., has started excavation of a site for a new central Michigan refinery near the Republic Truck Co. plant in Alma, Mich. Detroit interests recently considering a refinery site in Clare now are studying Bay City as a location.

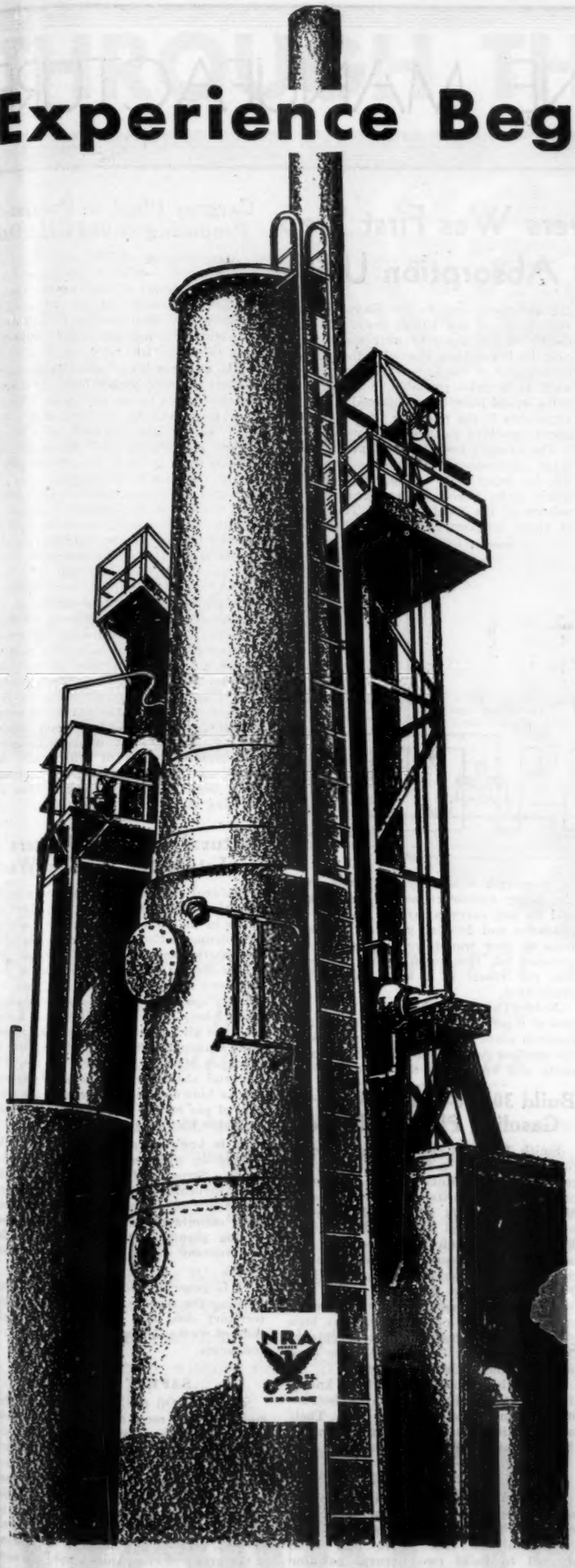
SOLVENT UNIT IS PROPOSED

Plans and specifications have been completed for the construction of a solvent extraction plant at the Gulf Refining Co.'s refinery in Philadelphia, Pa. Use of the Duo-Sol process has been proposed.

ROOSEVELT SUFFERS FIRE LOSS

MOUNT PLEASANT, Mich., Oct. 31. The 2,500-bbl. refinery operated by the Roosevelt Oil Co. suffered loss today of part of the equipment in a fire which apparently had its origin in the pump house. Claude Yaeger, 27, died of burns and others were injured. The loss included the pump house, four run-down tanks and two agitators.

Experience Begets Performance



IN TIMKEN REFINERY TUBES

Long experience in the manufacture of alloy steel is a heavy factor in the performance of Timken refinery tubes, for it assures uniformity of quality and grade—vital requirements in refinery tube steel.

At the Timken steel plant the manufacture and treatment of high quality alloy steels is a familiar everyday task to an organization of specialists which looks upon each customer's individual requirements as a goal that must be intelligently and completely attained.

In doing so we promote no particular steel or alloy, but produce any practical analysis that may be desirable or necessary in view of the conditions to be met.

We will appreciate the opportunity to discuss your tube problems at any convenient time. Remember that no tube is better than the steel from which it is made.

THE TIMKEN STEEL AND TUBE COMPANY, CANTON, O.

District Offices or Representation in the following cities:

Detroit Chicago New York Los Angeles Boston
Philadelphia Houston Buffalo Rochester Syracuse

As a result of the success of Timken Alloy Steels in refinery tubes and other high temperature applications, Timken has also created a group of four steels to provide outstanding performance in bolts and studs for elevated temperature work. These steels are so diversified in their individual characteristics that any bolt user's specific requirements can be met—with the proper balance between temperature resistance, price and safety factor. Write for complete information.

TIMKEN STEEL TUBES

WORLD'S LARGEST PRODUCER OF ELECTRIC FURNACE STEEL

NATURAL GASOLINE MANUFACTURE

Explains Shell Organization for Selling Liquefied Gases

By L. H. SPINER
Manager, Shellane Sales Department

Primarily because of its favorable freight advantages, the entire distribution of Shellane (Shell Oil Co.'s liquefied propane) presently centers around Shell's East Chicago refinery. Likewise, this location is the most central point from which to distribute Shellane in cylinders for that part of the Middle West which is considered the best potential market for this product.

Shellane is ordinarily produced in natural gasoline plants such as the Shell plant at Marshall, Okla., where it is made in conjunction with natural gasoline manufacturing. The East Chicago plant, however, produces Shellane by rectification from refinery gas recovery condensate. This new process provides so many important advantages that it is quite likely to become the general method of production.

Marketing Classified

The marketing of Shellane, sometimes termed "bottled gas," is divided into two major classifications—domestic and industrial. There are two distinct and widely separated phases to the domestic classification; the specialty selling phase being one, the utility or service phase being the other.

The specialty phase of Shellane when sold for domestic purposes, such as cooking, baking, lighting and refrigerating, encompasses all of the details normally attendant to the sale of any new household convenience or time and labor-saving device.

In general the principal market for the appliances used for domestic purposes is of a replacement nature because most families who are logical prospects have some type of equipment for their present cooking and baking needs, such as wood, coal, kerosene, gasoline or electric stoves.

The sale of Shellane generally starts where city gas development ends, thus resulting in a suburban or rural market wherein the prospects are separated by long distances. Greater travel and more time is required on each sale in this type of solicitation than in the merchandising of items that can be sold in more concentrated areas or without the need of direct (house-to-house) sales methods.

Of the three ways of merchandising—by mail, through stores and "house-to-house" solicitation—the latter involves the greatest sales costs, thereby requiring a margin of profit that is larger than usually is required in the sale of similar appliances when sold for "city gas" use.

The utility phase includes the initial installation of the equipment required for the utilization of Shellane, the subsequent deliveries of refills and service. The utilization equipment is leased to the user at a monthly rate which includes costs of all service necessary to provide uninterrupted use. The agreement assures a supply of Shellane at a maximum price for the term of the lease.

Equipment Usually Leased

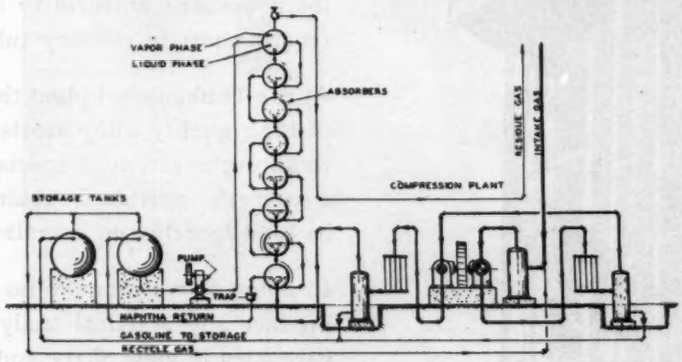
The custom of leasing, rather than selling, equipment has become prevalent throughout the industry and it is estimated that less than 3 per cent of the installations now being made are with equipment that is sold outright.

The combination of these two phases of the domestic portion of the "bottled gas" industry obviously requires a well-trained dealer organization that is adequately equipped in sales and service facilities.

Use of Naphtha Towers Was First Step in Development of Absorption Unit

A general discussion of the development of gasoline manufacturing methods would hardly be complete without a few words regarding the naphtha absorption process. This absorption process is more or less a refinery development for the recovery of nondensible vapors from crude stills, cracking stills, etc. The process could better be described as a blending process because it produces a blended product without the necessity of distillation.

One of the first plants of this type used in the natural gasoline industry was built at Falling Rock, W. Va., about the year of 1915. The plant consisted of 10 or 12 horizontal absorbers made of 12-inch pipe about 18 feet long. These absorbers were placed one above the other as shown on the accompanying flow diagram. Each absorber was fitted with a 2-inch perforated pipe on its bottom side which served as a bubbler.



In the diagram naphtha is shown entering the top absorber, flowing downward, leaving the bottom absorber through a gasoline trap, while residue gas from the compression plant enters the bottom absorber, flows upward through the perforated pipes and leaves the top absorber through a relief valve which maintains a constant pressure of about 200 pounds per square inch on both the compression plant and the absorption plant. In general this process consists of bringing the gas into intimate contact with the naphtha, resulting in the formation of a liquid phase that is rich in the heavier hydrocarbons of the gas and a gaseous phase consisting mainly of the lighter hydrocarbons.

The operation of these plants was quite simple. The general practice was to recirculate the naphtha through the absorber until the desired saturation was obtained—the degree of saturation being determined with a hydrometer. In the operation of these plants particular care had to be exercised that the absorption was not carried too far. In that event a point would be reached where the gas would become saturated with the heavy hydrocarbons of the naphtha, resulting in a loss of naphtha as well as a loss of the gasoline content of the gas.

The selection of this particular plant for discussion was on account of its unique construction. You will note that while this plant was built almost 20 years ago, the absorption apparatus is a very close approach to the modern bubble plate column. Each of the horizontal absorbers can be considered as the equivalent of one bubble tray. The efficiency of the absorber unit would probably be lower than that of a bubble tray on account of the excessive length of the unit. It is quite probable that better results would have been obtained with this apparatus if the absorber units had been about one-third as long as they were.

The product from these plants contains large portions of butane and propane which, being only temporarily in the liquid state, rapidly escape, reducing the volume of the final product. The escape of these temporary liquids are retarded to a certain extent by the presence of the heavy hydrocarbons of the naphtha and do not carry away as much of the pentanes and heavier gasoline hydrocarbons as they would were it not for the presence of the naphtha hydrocarbons. The net result is a slight increase in production.

Note—The above discussion is the second of a series tracing the major changes made in plant designs and operation since the earliest compression unit. Subsequent parts will appear on this page.

Build 30,000-Gallon Natural Gasoline Plant at McLean

Smith Brothers Refining Co., recently formed, will build a 30,000-gallon natural gasoline plant in McLean, Tex., to process gas produced from its own acreage around McLean. The plant will include three absorption units and one distillation unit. The absorption units will operate at 250 pounds well pressure and will have a combined capacity to handle up to 100,000,000 feet of gas daily.

The general contract for the design and construction of the plant has been given to the Tulsa Boiler & Machinery Co. and all work is planned to be completed by the end of December.

The Smith Brothers have been known throughout the Panhandle area because of their interests in cotton gins. Their large holdings in gas acreage prompted them to enter the gasoline business.

TALL PINES ORGANIZATION

FORT WORTH, Tex., Nov. 1.—Sidney Fitzner, Robert Kemp and associates of Tyler, Tex., have organized the Tall Pines Natural Gas Corp. and have planned to build two natural gasoline plants in the East Texas Field. The proposed location for one plant is near Tyler and other plant will probably be in the extreme north end of the field.

Cargray Plant in Panhandle Producing 20,000 Gals. Daily

Approximately 20,000 gallons of natural gasoline is being manufactured daily in the new plant of the Cargray Corp. at Pampa, Tex. The finished product is being taken by the Phillips Petroleum Co. and is delivered to the latter company by pipe line.

The Cargray plant is the largest of the natural gasoline plants built in the Mid-Continent area in the past year. Construction work started shortly after a long legal battle was decided in favor of Hagy, Harrington and Marsh, a partnership owning large gas-producing acreage in the Texas Panhandle. Due to a ruling of the Texas Railroad Commission, gas could not be produced unless the residue was utilized for producing light, heat or power. The partnership appealed to the Texas Railroad Commission on the grounds that their acreage was being drawn upon to supply gas pipe lines through wells adjacent to their land. The commission granted permission to utilize the gas for the manufacture of natural gasoline and allowed the gas to be burned in the air. Numerous other permits were granted and the production from the sour gas area of the Panhandle has shown a marked increase in the output of natural gasoline. Other plants have been proposed and additions to existing plants have been contemplated, some of which have materialized, but so far no major changes have been announced other than the building of the Cargray plant.

Natural Gasoline Makers Interested in Gas Waste

Natural gasoline manufacturers, studying the statements made by Secretary Ickes in his address before the American Petroleum Institute in Chicago last week, are particularly interested in that part which dealt with the wasting of gas. "Billions of feet of natural gas," said Mr. Ickes, "spelling comfort and convenience and riches, have been allowed to escape into the air. It has been said by responsible students of the oil industry that as much as 80 to 90 per cent of the oil is lost and abandoned in the sand. Natural gas is blown into the air and the function of gas energy disregarded in the mad scramble for 'more oil now'."

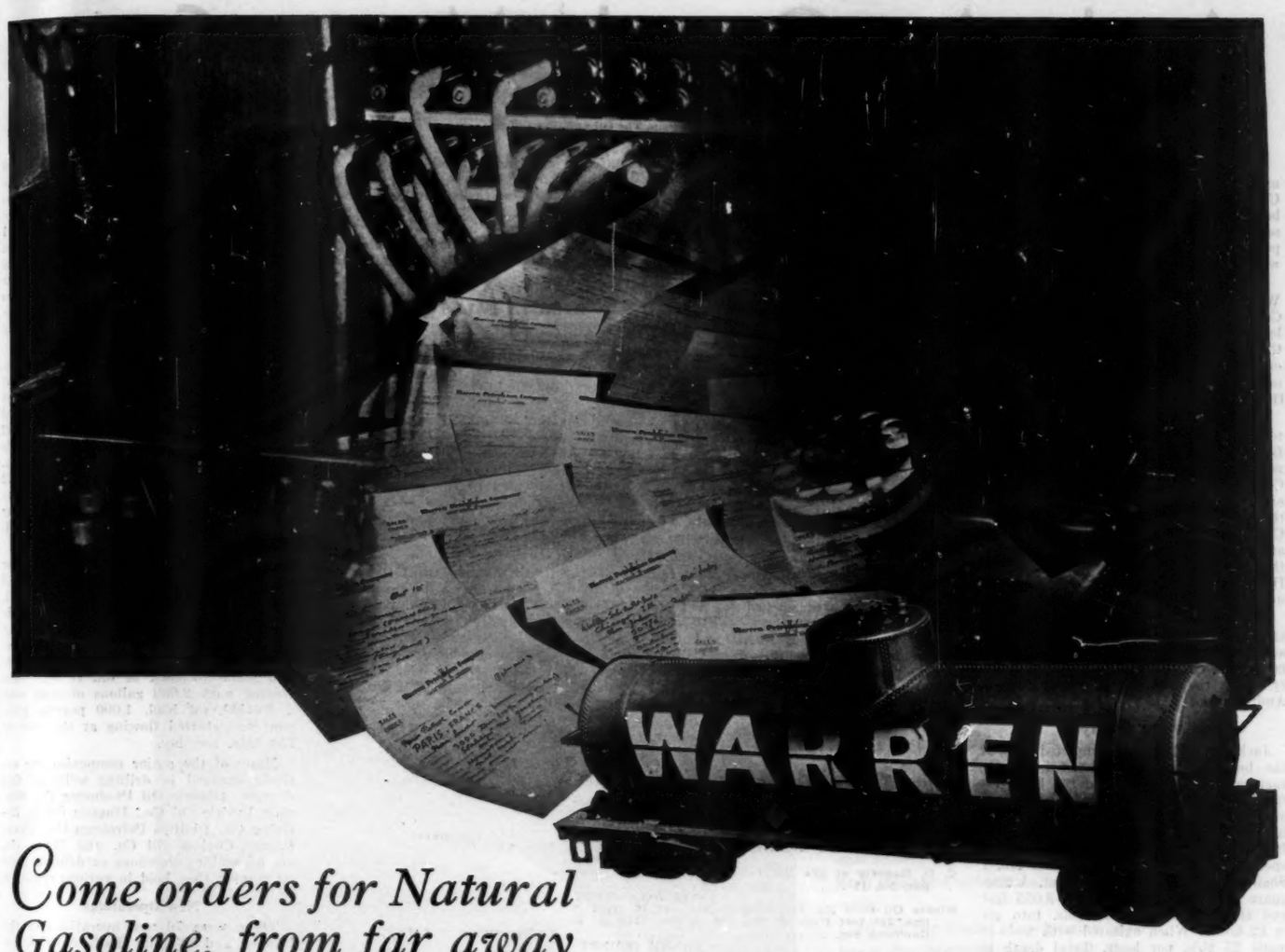
It is known that gas continues to be wasted in practically all of the major fields. Strong efforts have been made with favorable results in curtailing gas waste in California. Mid-Continent gasoline manufacturers, particularly those having plants in the Texas Panhandle, are turning these facts over in their minds.

It is generally believed, however, that burning the residue gas in the air in this territory does not represent the magnitude of waste indicated in the secretary's comments.

SAFETY AWARDS

The Ohio Oil Co. and the General Petroleum Corp. received the highest awards given by the American Petroleum Institute for the prevention of accidents in natural gasoline plants for 1932. The certificates were given to representatives of these companies at the Chicago meeting of the Institute this past week. The award to the Ohio Oil Co. was based upon a record of 6.42 injuries per million work hours in the group of companies employing more than 160 men and the General Petroleum Corp. received its award for having no accidents among companies employing less than 160 men.

THROUGH THIS BOARD . . .



Come orders for Natural Gasoline, from far away Cities, States and Nations

This switchboard joins Warren's units with more than 100 far-flung plants into a single group. A group which is owned and operated by almost a hundred different individual companies—each with different producing policies. Through this close association with plant owners Warren can always know which plant is operating, the specifications and quantities of gasoline on hand, and from which plant natural gasoline can be shipped, without delay, at the best possible savings in freight.

"JUST NATURAL GASOLINE"

Long ago, foreign and domestic buyers learned to their great satisfaction, that it is more economical to order their natural gasoline from Warren Petroleum Company than it was to attempt to cover all sources of supply.

Don't waste time and money shopping for your various gasoline needs. Avoid complications by placing your order with Warren. They can supply any amount.

Telephone the headquarters for natural gasoline, long distance 460 or local 7131.

WARREN

PETROLEUM COMPANY
EXCHANGE TOWER, TULSA, OKLA.

Subsidiary: NATURAL GASOLINE CORPORATION, 1618 Investment Building, Pittsburgh, Pennsylvania, Phone COurt 1465

Activity Increasing in the Ector County District; Another Area Opened in Montague County

By L. E. BREDBERG
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Oct. 30.—Two more locations were staked in Ector County this week, the county which has been gaining in activity during the past several weeks, and in which the fourth pool was recently opened. The Addis area was the site of the new locations.

Ward County got two more locations. Winkler County, Glasscock and Howard Counties each got one location. One of the locations in Ward County was made by the Humble Oil & Refining Co., a west offset to the recent completion of Eppenauer, an extension to the O'Brien-Hutchings area in northern Ward County.

Humble Oil & Refining Co. is contemplating the drilling of three tests in Block A-42, Public School Lands, supposedly in the Fuhrman area, Andrews County. Humble Pipe Line Co. recently extended a gathering line to this and the Deep Rock area from northern Ector County and is in position to take oil from any other wells that might be drilled in the two areas, especially if its affiliate, Humble Oil & Refining Co., brings in any new production.

The Amerada Petroleum Corp. has purchased royalty interests under 10,880 acres from the J. M. Cowden heirs. The land involved is in northwest Ector County or on the common corners of Ector, Andrews and Winkler County.

Ward County

Jack Leidecker has completed one of the best tests yet completed in southeastern Ward County, and the best test from the deeper pay in the Grand Falls area. This test is on the Archenhold lands in Section 23, Block 5, H.&T.C. Survey. It topped the deep pay zone originally opened by Abell Brothers in their No. 1 Shell-Sloan well, at 3,030-40 feet. A 230-quart shot was set from 2,960-3,055 feet and the well flowed 150 bbls. into pit in 12 hours. When agitated with tools it made 25 bbls. per hour. Total depth is 3,070 feet. The oil tested 33.3 degrees. From 8 a. m., October 24 to 1 a. m., October 25 it made 450 bbls. The Railroad Commission has not yet taken gauge by which it will set a daily allowable.

Cub Wheeler and Guthrie of Abilene plan to drill a test on a big block assembled in southwestern Scurry County. If it fails to make a commercial producer from the regular lime pay it may later be carried to the Ordovician lime.

Schleicher County

H. H. Cooper and others plan to deepen Wilson's No. 1 Page test in Section 40, Block L, G.H.&S.A. Survey, Schleicher County, which has been shut down indefinitely at 5,053 feet. Phillips Petroleum Co., Shell Petroleum Corp., Humble Oil & Refining Co. and others have made donations for deepening the test to the Ordovician lime. Six and five-eighths inch casing was set at 4,763 feet and the rest of the hole is said to be in good condition for deeper drilling. This will make an exceptionally interesting test as companies and independents alike have previously been interested in the area and have desired seeing a test carried to the Ordovician, many feeling there are good possibilities of getting deep production.

Yates Field

The Yates Field, Pecos County, was seven years old on October 28. It has produced nearly 175,500,000 bbls. and is still considered good for producing another 12 or 15 years. It is now curtailed to 44,530 bbls. per day and will soon be cut to 42,500 bbls. There are 413 wells in the field, only 17 producing the marginal well allowance.

The latest producer in the field, M. D. Bryant and others' No. 1 W. F. Robertson, was completed on October 27 for an initial production of 2,000 bbls. per hour at a total depth of 1,323 feet. This is a good example of how pressures and production are holding up in this field, one of the first fields to be prorated in Texas, and no doubt the most exemplary prorated field.

Loffland Brothers' No. 1 Tubbs, in Section 9, Block B-27, P.S.L. Survey, had a showing of oil at 3,005 feet and is making an estimated 25 bbls. of oil with 3,000,000 feet of gas per day at 4,295-4,305 feet. Gas increased from 4,304-06 feet and oil and gas increased at 5,315-25 feet. It is now shut down at 4,339 feet to run a string of casing, the hole being open from 500 feet on down until 12½-inch casing was recently run. Six and five-eighths inch pipe will be run to 4,281 feet and a test made of the saturated streaks of lime. This test is on the extreme western side of Crane County in an area opened by a freak well over three years ago. That well, drilled by Cranfill Brothers and Gulf Production Co., was the first well in West Texas to produce oil below the sulphur water horizon. It produced until recently when junk and cavings necessitated a cleaning out job which is now taking place. The new test is one-quarter of a mile northeast of the discovery. Two dry holes have been drilled in quest of the pay found in the discovery. The present test appears as a possible producer. It is running 6 feet higher than the discovery.

WICHITA FALLS DISTRICT

Benton & Holmes have completed their No. 1 Mrs. C. L. Davenport in Block 27, J. Fitch Survey, northeast Montague County, for an initial production of 100 bbls. the first 24 hours, falling off to 50 bbls. the second 24 hours. The oil sand was logged from 1,477-81 feet and from 1,517-32 feet. This makes an extension of 1½ miles or opens up another area in this part of the county. A line has already been laid to connect with the well which is only 3 miles east of the Blucher Pool of northwest Cooke County.

The Sinclair Prairie Oil Co. brought in another good well on its Moran lease in southeast Young County this week, extending production about 1,000 feet north of the company's No. 1 Moran which has been producing since 1924 and which has produced over 1,000,000 bbls. of high gravity oil. The discovery well is still flowing. The new well, No. 5 Moran, is producing from sand logged at 2,485-2,519 feet, estimated good for 300 bbls. of oil and 5,000,000 feet of gas per day. Three dry holes have been drilled in other directions from No. 1 Moran which is considered to be located on a long stringer of sand extending south from the Kisinger Pool. Another test will be drilled a short distance to the north of the new producer. Stanolind Pipe Line Co. is taking the oil from wells in this area.

Cullum and Sinclair Prairie Oil Co. completed an exceptional well in their No. 4 Falls-Scranton in the southwest corner of Block 17, Falls County School Lands, southern Archer County. This well is an old producing area in which wells produce around 25 to 50 bbls. per day. It logged saturated lime from 1,105-22 feet and was treated with 1,000 gallons of acid with a 96-bbl. oil load under pressure. When put on production it swabbed 25 bbls. per hour.

Pitzer and West brought in another unusual well in this district, their No. 3 James, in the T.E.&L. Survey No. 457, several miles northwest of Graham in Young County. It drilled gray lime from 3,837-3,927 feet and had no natural showing of oil. It was shot with 90 quarts and made 15 bbls. of oil. It was then treated with 2,000 gallons of acid with a 200-bbl. oil load, 1,000 pounds pressure and started flowing at the rate of 150 bbls. per day.

Many of the major companies are actively engaged in drilling wells in this district, Atlantic Oil Producing Co., Sinclair Prairie Oil Co., Humble Oil & Refining Co., Phillips Petroleum Co., Texas Pacific Coal & Oil Co. and Texas Co. are all staking locations or drilling tests on acreage they hold in various counties.

New Operations

There were 70 new operations in the Ranger and Wichita Falls district, including acid treating, deepening of old wells and drilling of new tests. This is the greatest number of activities in the two districts in a long time.

Texas Pacific Coal & Oil Co. has taken a 1,600-acre block north of Eliasville in southern Young County but does not contemplate drilling on same at the present time.

Pipe line runs in the Wichita Falls district averaged 55,000 bbls. per day during the past week. This is a decrease of 868 bbls. under the daily average of the previous week.

The North Texas district (Wichita Falls) has been allocated 56,500 bbls. daily production. The West Central district (Ranger) remains unchanged at 25,000 bbls. per day.

PANHANDLE DISTRICT

Production of the Panhandle district has been cut to 42,000 bbls. per day under new proration orders issued by the Railroad Commission. The potential of the area is 149,758 bbls., of this amount 120,499 bbls. is proratable oil and 26,467 bbls. is marginal well oil. Total water production of the district is 31,133 bbls. per day.

Phillips Petroleum Co.'s No. 3 Margaret Johnson in Section 34, Block Y, A.&R. Survey, Hutchinson County, was completed for the largest well in the Panhandle this week when it averaged 2,551 bbls. per day on a proration test made by the Railroad Commission. Pay was topped at 3,025-26 feet, with an increase in oil at 3,055-75 feet, making 18,000-

(Continued on Page 40)

Wildcat Operations in West Texas

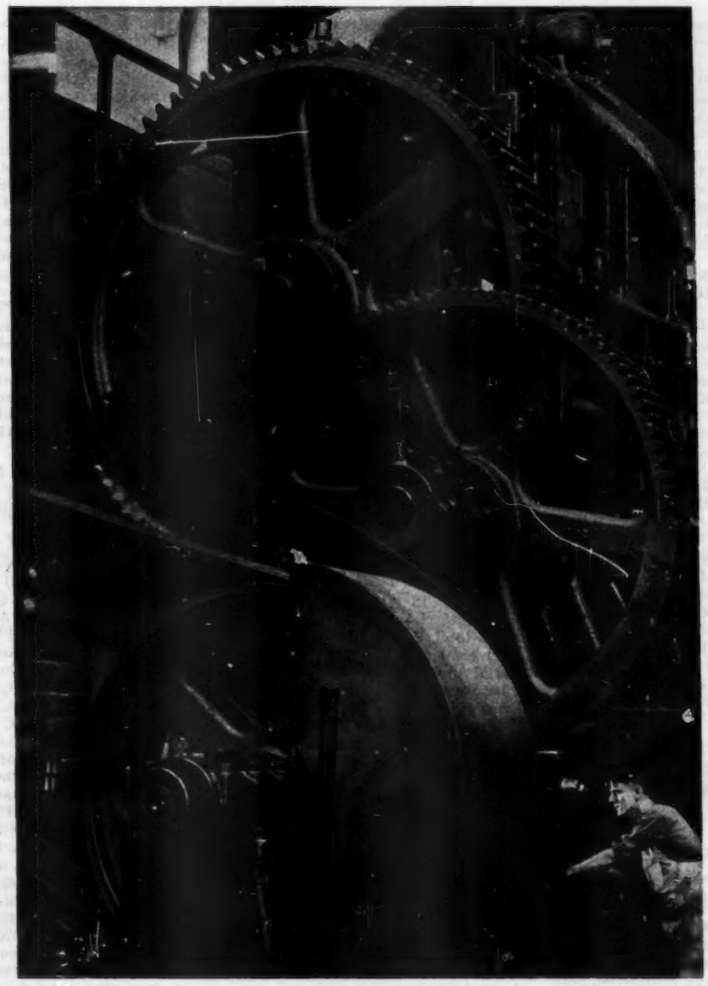
Week Ending October 30

Company, well, farm name, section and block—	Remarks
BREWSTER COUNTY	
C. M. Joiner's No. 1 McIntyre	Drlg. 1,040 ft.
COKE COUNTY	
C. D. Hagerty et al's No. 1 Gaston, in Joseph Young Sur. No. 11	T.D. 710 ft.
CONCHO COUNTY	
Mintex Oil Co.'s No. 2 Waring Estate, 660 ft. from N line, 150 feet from W line SW ¼ Sec. 2120, A. T. Robinson Sur.	Underreaming at 1,460 ft.
CRANE COUNTY	
Gulf Prod. Co.'s No. 1 Edwards, 330 ft. from S line and 330 ft. from E line of Sec. 21, Blk. B-18, Public School Land Sur.	Rig up.
Loffland Bros.' No. 1 Tubbs, 1,334 ft. from N line, 1,330 ft. from W line, Sec. 9, Blk. 27-B, P.S.L. Sur.	S.D. 4,339 ft.; slight show of oil and est. 1,000,000 ft. of gas 4,295-4,300 ft.; increase in gas 4,303-06 ft.; increase in oil and gas 4,315-25 ft.; est. 25 bbls. of oil and 3,000,000 ft. of gas.
ECTOR COUNTY	
Atlantic Oil & Prod. Co.'s No. 1 Holt, 1,980 ft. from N line and 660 ft. from E line of Sec. 19, Blk. A, P.S.L. Sur.	Location.
Atlantic Oil & Prod. Co.'s No. 2 Holt, 660 ft. from N line and 1,980 ft. from E line of Sec. 19, Blk. A, P.S.L. Sur.	Location.
Atlantic Oil & Prod. Co.'s No. 1 Jones, 3,310 ft. from N line and 440 ft. from W line of Sec. 36, Blk. 43, Twp. 2s, T.&P. Sur.	Building rig.
Broderick & Calvert et al's No. 1 E. F. Cowden, 2,240 ft. from E line, 330 ft. from S line of Sec. 25, Blk. 44, Twp. 2s, T.&P. Sur.	Will run tubing; T.D. 4,338 ft.
Harrison et al's No. 2 Addis, 990 ft. from N line and 2,200 ft. from W line of Sec. 35, Blk. 43, Twp. 2s, T.&P. Sur.	Location.
Harrison et al's No. 3 Addis, 1,650 ft. from N line and 2,200 ft. from W line of Sec. 35, Blk. 43, Twp. 2s, T.&P. Sur.	Location.
Skelly Oil Co.'s No. 1 Addis, 990 ft. from N line and 2,200 ft. from E line of Sec. 35, Blk. 43, Twp. 2s, T.&P.R.R. Sur.	Spudding.
Fred Turner's No. 1-B F. V. Addis, 440 ft. from the E line and 330 ft. from S line of Sec. 35, T.&P.R.R. Sur., Blk. 43, Twp. 2s	Drlg. 995 ft.
FISHER COUNTY	
Condor Pet. Co.'s No. 1 Holley, 1,170 ft. W and 660 ft. from N lines of E half, Sec. 6, Blk. R, W. E. Richardson Sur.	Moving in material and S.D.
Cranfill & Reynold's No. 3 W. M. Flannigan, 165 ft. S of N line and 330 ft. W of E line of W half Sec. 200, Blk. 1, B.B.B.&C.Ry. Sur.	Drlg. 2,531 ft.
Cranfill & Reynold' No. 3 T. Willingham, Sec. 199, Blk. 1, B.B.B.&C.Ry. Sur.	Drlg. 2,855 ft.
Merry Bros. and Perini's No. 1 J. J. Steele, 330 ft. E and 180 ft. N of SW cor. NE Sec. 210, B.B.B.&C. R.R. Sur.	Moving in material.
Mid-Continent Petroleum Corp.'s No. 1 A. E. Pardue, 660 ft. N of S line and 330 ft. W of E line of NW Sec. 202, Blk. 1, B.B.B.&C.Ry. Sur.	Swabbed 500 bbls. oil in 14 hrs.; T.D. 3,107 ft.
Southern's No. 1 King, 660 ft. from N and 330 ft. from W line of SW Sec. 193, B.B.B.&C. Sur.	T.D. 290 ft.

(Continued on Page 42)

★ ★ ★ ★ ★

The Indispensable Partner of Industry



PRACTICALLY everything you eat, and drink, and wear, and look to for subsistence and diversion, has been given a helping hand, somewhere along its road to you, by machinery. And that machinery could not long continue to turn without the help of its proper lubricant.

A special Gulf oil administers to the machinery that grinds the flour from which your bread is made. Another helps clothe you by keeping the busy spindles of New England textile mills whirring smoothly.

Another, in a famous pharmaceutical house, lubricates a machine so amazingly delicate that a watch looks clumsy beside it—a machine engaged in making a drug upon which your life may some day depend.

Another permits the incredible machinery of a Detroit factory to turn out your automobile while you wait.

In all, the Gulf Laboratories have been the birthplace of more than four hundred of these lubricants—every one different from every other, every one capable of performing some function that no other oil *could perform.*

Yes, this is a Machine Age. But it's also an *Oil Age,* for oil is as necessary to every machine as blood is to us. And Gulf is proud of the part Gulf Industrial Oils have played, are playing, and shall continue to play, in keeping the wheels turning!

GULF INDUSTRIAL LUBRICATION

GULF REFINING COMPANY

PITTSBURGH, PA.

Sales Offices

Boston New York Philadelphia Atlanta New Orleans
Houston Pittsburgh Louisville Toledo

West Texas Fields

(Continued from Page 38)

000 feet of gas with the oil. It is in the southwest extension area of the Borger Pool. Continental Oil Co. will drill a west offset, and Combination Oil & Gas Co. will probably drill a test on its south offset lease.

Production for the district during the week averaged 45,200 bbls. per day, a drop of 1,805 bbls. per day under the previous week's daily average. There are 1,095 producing wells in the district.

COMPLETIONS IN WEST TEXAS

Howard County

Group No. 1 Oil Co. and Continental Oil Co.'s No. 4 Eason, top pay 2,350 feet, increase 2,375-84 feet, initial production 53 bbls. per hour pumping, total depth 2,384 feet. Plymouth Oil Co.'s No. 3 Kloh (old well drilled deeper), old total depth 2,300 feet, new total depth 3,205 feet, increase in oil at 2,340 feet, 2,407 feet and 2,478 feet, water at 2,535 feet, plugged back to 2,482 feet, shot with 100 quarts from 2,424-77 feet, initial production 163 bbls. of oil plus 3½ per cent water.

Pecos County

J. V. Massie's No. 1 Iowa Realty Co., top pay 1,606 feet, total depth 1,645 feet, plugged back to 1,632 feet, initial production 24 bbls. per day. Mid-Kansas Oil & Gas Co.'s No. 33 I. G. Yates, top pay 1,535 feet, initial production 72 bbls. per hour, total depth 1,629 feet; No. 34 I. G. Yates, top pay 1,085 feet, initial production 35 bbls. per hour flowing, total depth 1,259 feet. Sproles & O'Neal's No. 2-B Fred Turner, flowed 4,343 bbls. in 12 hours from 1,237-60 feet, initial production 1,920 bbls. in one hour, total depth 1,428 feet; No. 2-C Fred Turner, top pay 1,225 feet, increase at 1,440-45 feet, initial production 20 bbls. per hour through casing, total depth 1,493 feet; No. 1-D Fred Turner, top pay 1,102 feet, increase at 1,125-30 feet and 1,175 feet, initial production 21 bbls. per hour, total depth 1,266 feet.

Fisher County

Roeser & Pendleton's No. 1 T. E. Hill, top lime pay 3,093 feet to 3,101 feet, initial production 600 bbls. after acid treatment, total depth 3,101 feet.

Ward County

Gulf Production Co.'s No. 35 O'Brien, top pay 2,589 feet, initial production 348 bbls. per day, total depth 2,747 feet.

Winkler County

Sid Richardson's No. 2 W. F. Scarborough, top pay 2,855 feet, initial production 200 bbls. per day flowing through 2½-inch tubing, total depth 2,965 feet. Sinclair Prairie Oil Co.'s No. 2 W. F. Scarborough, top pay 2,874 feet, initial production 45 bbls. per day flowing through 2½-inch tubing. Harry Adams' No. 3 W. F. Scarborough, top pay 2,905 feet, initial production 52 bbls. per day flowing through 2-inch tubing, total depth 3,183 feet.

COMPLETIONS IN PANHANDLE

Carson County

H. A. M. Oil Co.'s No. 4 Cooper, shot with 190 quarts from 3,125-72 feet, initial production 117 bbls., total depth 3,072 feet.

Gray County

Denworth Oil Co.'s No. 2 Webb, shot with 145 quarts from 2,445-95 feet, increase at 2,570-98 feet, initial production 200 bbls., total depth 2,598 feet. Saulsbury Oil Co.'s No. 1 Cubine, gas sand from 2,262-85 feet, initial production 19,500,000 feet of gas, total depth 2,285 feet. Danciger Oil & Refining Co.'s No. 2 Wright, pay 2,740-45 feet, 2,755-59 feet, and 2,762-2,850 feet, initial production 1,975 bbls., total depth 2,850 feet. Dixon Creek Oil & Refining Co.'s No. 3-A Harmer, pay 3,195-3,236 feet, initial production 310 bbls. on pump, total depth 3,246 feet. Gardner Brothers' No. 2 Bull, total depth 2,950 feet, plugged back to 2,910 feet, initial production 15 bbls. on pump.

Sinclair Prairie Oil Co.'s No. 3 Coomley, initial production 230 bbls. on five-day average on pump, total depth 3,141 feet. Stanolind Oil & Gas Co.'s No. 3 Palmer, total depth 3,090 feet, plugged back to 3,080 feet, drilled deeper from 2,935 feet, show of oil 3,060-70 feet, initial production 20 bbls. on pump. Sunray Oil Co.'s No. 2 Cook-Faulkner (old well drilled deeper), old total depth 2,933 feet, new total depth 2,947 feet, increase 2,933-47 feet, initial production 200 bbls.; No. 3 Cook-Faulkner (old well drilled deeper), new total depth 3,043 feet, old total depth 2,931 feet, increase in pay 2,931-3,043 feet, initial production 500 bbls.; No. 4 Cook-Faulkner (old well drilled deeper), new total depth 3,046 feet, old total depth 2,930 feet, initial production 390 bbls.; No. 5 Cook-Faulkner (old well drilled deeper), new total depth 3,070 feet, old total depth 2,902 feet, increase in pay 2,902-3,070 feet, initial production 450 bbls.

Wheeler County

Mid-Continent Petroleum Corp.'s No. 1 Carwile, shot with 30 quarts from 2,300-20 feet, initial production 100 bbls., total depth 2,418 feet.

Hutchinson County

Danciger Oil & Refining Co.'s No. 1 Johnson Brothers, abandoned rig. Herman & Dunnigan's No. 1 Haile, pay 2,979-98 feet, increase at 3,012 feet, estimated 40 bbls., total depth 3,040 feet. Phillips Petroleum Co.'s No. 3 Johnson, pay 3,025-75 feet, initial production 2,555 bbls. of oil and 18,000,000 feet of gas, total depth 3,075 feet.

COMPLETIONS IN RANGER DISTRICT

Brown County

S. O. Looper's No. 1 fee, temporarily abandoned. Petroleum Producers Co.'s No. 2 Williams, dry and abandoned, total depth 1,464 feet. M. L. Richard and others' No. 1 C. A. Thomason, dry and abandoned, total depth 1,054 feet. Emmett Whiteside's No. 1 W. H. Pierce, dry and abandoned, total depth 1,332 feet. S. B. Owens' No. 8 Lynch, dry and abandoned, total depth 1,310 feet.

Callahan County

Hayek Oil Co.'s No. 3 E. L. Finley, show of oil 542-48 feet, initial production 20 bbls., total depth 548 feet. J. H. Kleiner's No. 1 A. C. Alvord, dry and abandoned, total depth 917 feet. Shoffner and Lane's No. 1 Estal, temporarily abandoned. Snebold's No. 1 Finley, temporarily abandoned. J. G. Terry's No. 1 T. A. Wylie, dry and abandoned, total depth 395 feet.

Coleman County

Guy R. Anderson's No. 1 R. L. Dunman, temporarily abandoned, 2,080 feet. C. L. Vaughn's No. 1 W. L. Moody, temporarily abandoned.

Erath County

J. C. Cruse and others' No. 1 J. B. Wedlington, temporarily abandoned.

Palo Pinto County

O. S. Chapman's No. 1 W. Luce, temporarily abandoned. O. P. Coffin's No. 1 J. A. Emberlin, dry and abandoned, total depth 715 feet. W. K. Gordon and others' No. 1 J. F. Butler, dry and abandoned, total depth 3,520 feet. Tom Hughes and M. Dalton's No. 1 Pennington, temporarily abandoned.

Shackelford County

Freeman and others' No. 6 Morris-Buie, show of oil 1,598-1,609 feet, initial production 100 bbls., total depth 1,609 feet. Texas Central Oil Co. and others' No. 1 W. D. Reynolds, total depth 770 feet, plugged back to 740 feet, initial production 10 bbls., shot 15 quarts.

COMPLETIONS IN WICHITA FALLS DISTRICT

Archer County

Consolidated and Cline's No. 1 Kinder, dry and abandoned, total depth 1,354 feet. Fain and McGaha's No. 9 Ferguson, oil sand 647-77 feet, initial production 20 bbls., total depth 677 feet; No. 10 Ferguson, dry and abandoned, total depth 674 feet; No. 11 Ferguson, oil sand 638-41, 643-51 feet, initial production 12 bbls., total depth 651 feet; No. 12 Ferguson, oil sand 651-59 feet, initial production 4 bbls., total depth 659½ feet. W. F. Houston's No. 1 Muse, dry and abandoned, total depth 467 feet. Stump and others' No. 5 Wilson, temporarily abandoned, total depth 1,870 feet. Whitehill Oil Corp.'s No. 21 Morrison, oil sand 661-73 feet, initial production 10 bbls., total depth 673 feet.

C. L. Abercrombie's No. 3 Abercrombie, sandy lime 1,144-57 feet, initial production 90 bbls. of oil, treated with acid, total depth 1,157 feet. O. T. Anderson and others' No. 5 Abercrombie, sandy lime 1,179-92 feet, shot 60 quarts and treated with acid, initial production 30 bbls., total depth 1,192 feet. Art and Carter's No. 3 Arnold, sandy lime 1,186-92 feet, initial production 50 bbls. of oil, treated with acid, total depth 1,197 feet. Art and Carter's No. 5 Arnold, sandy lime 1,190-1,202 feet, initial production 55 bbls., total depth 1,202 feet. Boller and Grisham's No. 1 W. R. Farmer, sandy lime 1,414-28 feet, initial production 200 bbls. of oil and 15 bbls. of water, treated with acid; Bonner Oil Co.'s No. 3 Abercrombie, sandy lime 1,180-1,201 feet, initial production 50 bbls. treated with acid, total depth 1,201 feet.

W. R. Cooper and others' No. 1 G. B. Hamilton, oil sand 1,096-1,105 feet, initial production 50 bbls. of oil, total depth 1,105 feet. H. Craig's No. 2 Harmonson, oil sand 841-52 feet, initial production 8 bbls., total depth 852 feet. H. Craig's No. 3 Harmonson, oil sand 857-60 feet, initial production 10 bbls., total depth 865½ feet. F. P. Cullum's No. 3 Logan, sandy lime 1,159-73 feet, initial production 60 bbls., total depth 1,173 feet. Fain and McGaha's No. 1 Falls County School Lands, sandy lime 1,119-32 feet, initial production 300 bbls., total depth 1,132 feet; No. 2 Falls County School Lands, sandy lime 1,121½-33 feet, initial production 150 bbls., total depth 1,133 feet. W. B. Hamilton's No. 10 Abercrombie, sandy lime 1,192-1,201 feet, initial production 80 bbls., total depth 1,201 feet; No. 11 Abercrombie, sandy lime 1,190-1,204 feet, initial production 97 bbls., total depth 1,204 feet; No. 12 Abercrombie, sandy lime 1,197-1,208½ feet, initial production 150 bbls., total depth 1,208½ feet; No. 13 Abercrombie, sandy lime 1,145-52½ feet, initial production 250 bbls., total depth 1,152½ feet; No. 14 Abercrombie, sandy lime 1,180-91 feet, initial production 200 bbls., total depth 1,191 feet; No. 15 Abercrombie, sandy lime 1,147-55 feet, initial production 200 bbls., total depth 1,155 feet; No. 6 Cartwright, sandy lime 1,175-77½ feet, initial production 160 bbls., total depth 1,177½ feet; No. 6 Ikard, sandy lime 1,152½-64½ feet, initial production 500 bbls., total depth 1,164½ feet; No. 7 Ikard, sandy lime 1,151-57½ feet, initial production 400 bbls., total depth 1,157 feet; No. 7 Winfield Ikard, sandy lime 1,167-71½ feet, initial production 150 bbls., total depth 1,171½ feet; No. 2 Longley, sandy lime 1,141-54½ feet, initial production 250 bbls., total depth 1,154½ feet; No. 5 W. I. Pace, sandy lime 1,150-59 feet, initial production 250 bbls., total depth 1,159 feet.

Helena Oil & Gas Co.'s No. 8 Ray, base of sand 1,121-31 feet, initial production 15 bbls. of oil and 20 bbls. of salt water, total depth 1,131 feet. King and Krahenbuhl's No. 3 Sheckell, sandy lime 1,174-78 feet, initial production 100 bbls., total depth 1,178 feet. McDaniels and Horwitz, sandy lime 819-27½ feet, initial production 15 bbls., total depth 827½ feet. Perkins and Cullum's No. 4 Abercrombie, base of sand 1,008-18 feet, initial production 12 bbls., total depth 1,018 feet; No. 4 Falls, sandy lime 1,158-69 feet, initial production 25 bbls., total depth 1,169 feet; No. 11 Falls-Tikten, sandy lime 1,107-29 feet, initial production 30 bbls., total depth 1,129 feet. Petroleum Producers Co.'s No. 4 Richardson, dry and abandoned, total depth 1,187 feet. C. E. Rosenfield's No. 1 Longley, dry and abandoned, total depth 1,000 feet. S. Starcy and others' No. 1 Abercrombie, Taylor, dry and abandoned, total depth 1,505 feet.

Baylor County

D. M. Ross' No. 1 W. E. England, dry and abandoned, total depth 2,146 feet.

Jack County

Brazos River Gas Co.'s No. 2 Kinder, oil sand 2,930-40 feet, initial production 30 bbls. of oil and 4,000,000 feet of gas, total depth 3,055 feet. Cable and Fresno's No. 2 Moore, dry and abandoned, total depth 554 feet. W. S. Easley's No. 1 Wilkes, dry and abandoned, total depth 650 feet. Root Drilling Co.'s No. 5 Coleman Leach, dry and abandoned, total depth 565 feet. Shabay and Fulton's No. 1 Fields, oil sand 2,916-56 feet, initial production 35 bbls., total depth 3,000 feet.

Montague County

Bridwell Oil Co.'s No. 1 Edmondson, dry and abandoned, total depth 1,407 feet. Lesh and McCall's No. 3 Cunningham, gas sand 622-900 feet, initial production 5,000,000 feet of gas, total depth 900 feet.

Wichita County

C. R. Conyers' No. 3 C. P. Brokan, oil sand 823-30 feet, initial production 5 bbls., total depth 830 feet. Golding and Cochran's No. 5 Waggoner, oil sand 1,375-90 feet, initial production 61 bbls., total depth 1,390 feet. H. B. Hill's No. 4 Overby, show of oil 1,781-85 feet, initial production 25 bbls. of oil and 25 bbls. of water, total depth 1,784 feet. Morgen and Anderson's No. 32 Goetze, oil sand 788-95, 906-13 feet, initial production 25 bbls., total depth 913 feet. T. J. Waggoner, Jr.'s No. 2 Waggoner Brothers, dry and abandoned, total depth 1,450 feet.

Wilbarger County

Phillips Petroleum Co.'s No. 1 Waggoner, dry and abandoned, total depth 1,925 feet. Stanolind Oil & Gas Co.'s No. 3 Waggoner, dry and abandoned, total depth 2,404 feet. Waggoner Refining Co.'s No. 4 Waggoner, oil sand 1,287-90 feet, initial production 413 bbls., total depth 1,290 feet.

Wise County

Gordon West and Kark Kelly's No. 1 M. A. Wittley, temporarily abandoned.

Young County

Anzac Oil Co.'s No. 1 J. B. Smith, dry and abandoned, total depth 50 feet; No. 1 Lamar Smith, dry and abandoned, total depth 340 feet. F. Ard, Jr.'s No. 4 Belknap, oil sand 694-98 feet, initial production 50 bbls., total depth 698 feet. Belknap Oil Co.'s No. 2 Belknap, oil sand 699-703 feet, initial production 10 bbls., total depth 704 feet. Brazelton Brothers' No. 11 C. J. Taack, dry and abandoned, total depth 755 feet. Deninger and others' No. 1 Cox, dry and abandoned, total depth 618 feet. Gilmore and others' No. 1 Montgomery, oil sand 459-79 feet, initial production 30 bbls., total depth 479 feet. S. D. Glover's No. 1 H. W. Drum, dry and abandoned, total depth 577 feet. S. D. Glover's No. 3 Johnson, dry and abandoned, total depth 590 feet.

Iron Mountain Oil Co.'s No. 22 Tatum, oil sand 667-75 feet, initial production 6 bbls., total depth 675 feet. Jacobs Oil & Gas Co.'s No. 1 Thompson, lime 3,853-70 feet, initial production 40 bbls. after 90-quart shot, total depth 3,870 feet. Petroleum Producers Co.'s No. 6 Belknap, oil sand 691-701 feet, initial production 100 bbls., total depth 701 feet; No. 7 Belknap, dry and abandoned, total depth 733 feet. Tautenhahn's No. 1 Cantwell, dry and abandoned, total depth 504 feet. Texas Co.'s No. 1 Jeffery, dry and abandoned, total depth 906 feet; No. 1 Rubenkoenig, oil sand 2,861-72 feet, initial production 55 bbls. of oil and 50,000 feet of gas, total depth 2,922 feet. Texas Plains Oil Co.'s No. 5 Garvey, lime 724-26 feet, initial production 5 bbls. of oil and 15 bbls. of salt water, total depth 744 feet.

Wheeler and Brashear's No. 5 Jeffery, oil sand 744-50 feet, initial production 150 bbls., total depth 750 feet. White Duncan and others' No. 4 E. M. Wolf, oil sand 708-13 feet, initial production 20 bbls., total depth 713 feet; No. 6 E. M. Wolf, oil sand 693-701 feet, initial production 75 bbls., total depth 701 feet;

No. 6 G. R. Smith, oil sand 702-07 feet, initial production 60 bbls., total depth 702 feet. C. C. Williams' No. 2 Foster, oil sand 509-16 feet, initial production 10 bbls., total depth 524 feet. Leh Oil Co.'s No. 1 Manning, oil sand 2,733-40 feet, initial production 300 bbls. flowing with 475,000 feet of gas, total depth 2,740 feet.

East Texas Fields

(Continued from Page 33)

ducers will be cut almost to the marginal well limit.

For the week ending October 25 the daily average production for the field was 464,600 bbls. Daily average distribution was 579,240 bbls., 114,640 bbls. per day going out of storage. The new order going into effect on November 1 will cut the daily production by about 70,000 bbls. Runs to refineries picked up a little during the week, the daily average being 49,180 bbls. with 23 plants still shut down. Gasoline tax evasion has become almost impossible since the state comptroller's department sent a staff to check all refined products at and leaving the plant.

Wildcatting

There was one wildcat abandoned in East Texas during the week. There were three wildcat locations announced with derricks up on all three. One was Buchanan and others on the Staggers farm near Dangerfield in the Nelson Survey, Morris County. Hager and others have derrick up on the Worsham farm in the Alex O. Wetmore Survey near Sulphur Bluff in Hopkins County. H. O. Shawver and others have derrick up on the J. H. Jones farm in the L. Ferguson Survey, 6½ miles northeast of Greenville in Hunt County.

Pure Oil Co. has made a location for a Nacatosh sand test north of the Van Joint Account and on acreage offsetting the Peden and Olson Nacatosh sand producer. This will be the first shallow sand test drilled in this area by the company which developed the Van Field, Van Zandt County.

Humble Oil & Refining Co. has made two locations on the extreme north end of the Van Field. One is on the Listenbee tract in the John Goodman Survey and the other just south of that 30-acre tract and on the S. R. Ray farm in the Nacogdoches County School Lands Survey. Both are outside of the Van Joint Account, and are in an area separated from the main part of the field by several dry holes.

COMPLETIONS IN EAST TEXAS

North Gregg County

Amerada Petroleum Corp.'s No. 8 Bumpass, top sand 3,564 feet, initial production 38½ bbls. in one-quarter hour through open tubing, total depth 3,596 feet. Arkansas Fuel Oil Co.'s No. 15 Bumpass, top sand 3,487 feet, initial production 45 bbls. in one-half hour through three-quarters inch tubing choke, total depth 3,507 feet; No. 16 Burnside, top sand 3,481 feet, initial production 52 bbls. in one-half hour through 1-inch tubing choke, total depth 3,506 feet. Atlantic Oil Producing Co.'s No. 47 Moore, top sand 3,524 feet, initial production 100 bbls. per hour through open tubing, total depth 3,543 feet; No. 14 Turner, top sand 3,603 feet, initial production 85 bbls. per hour through open tubing, total depth 3,672 feet; No. 16 Turner, top sand 3,489 feet, initial production 110 bbls. per hour through open tubing, total depth 3,574 feet. Atlantic and Sun Oil Co.'s No. 44 Hayes, top sand 3,493 feet, initial production 85 bbls. per hour through open tubing, total depth 3,533 feet.

Bond and Dillard's No. 1 E. M. Clements, top sand 3,503 feet, initial production 60 bbls. per hour through open tubing, total depth 3,570 feet. East Texas Oil & Refining Co.'s No. 13 Hindman and Guy, top sand 3,620 feet, initial production 88 bbls. per hour through open tubing, total depth 3,660 feet; No. 15 F. White, top sand 3,538 feet, initial production 75 bbls. per hour through open tubing, total depth 3,560 feet. Gregg Oil Co.'s No. 1-K T.&P.R.R., top sand 3,519 feet, initial production 85 bbls. per hour through open tubing, total depth 3,565 feet. Gulf Production Co.'s No. 32 J. C. Judge, top sand 3,532 feet, initial production 70 bbls. per hour through open tubing, total depth 3,559 feet; No. 56 Judge, top sand 3,503 feet, initial production 77 bbls. per hour through open tubing, total depth 3,530 feet.

Humble Oil & Refining Co.'s No. 12 T. M. Armstrong, top sand 3,571 feet, initial production 80 bbls. per hour through three-quarters inch tubing choke, total depth 3,604 feet; No. 12 J. F. Boles, top sand 3,564 feet, initial production 49 bbls. per hour through three-quarters inch tubing choke, total depth 3,589 feet. King and Messingale's No. 4 E. E. Anderson, top sand 3,616 feet, initial production 90 bbls. per hour through open tubing, total depth 3,663 feet. Magnolia Petroleum Co.'s No. 9 G. W. Ritchie, top sand 3,585 feet, initial production 96 bbls. per hour through open tubing, total depth 3,595 feet. Manziel and others' No. 1 Victory, top sand 3,669 feet, initial production 85 bbls. per hour through open tubing, total depth 3,675 feet. Peyton Brothers' No. 4 J. M. Christian, top sand 3,565 feet, initial production 90 bbls. per hour through open tubing, total depth 3,604 feet. Selby Oil & Gas Co.'s No. 6 H. R. Snavely heirs, top sand 3,568 feet, initial production 76 bbls. in one-half hour through open tubing, total depth 3,589 feet.

Shell Petroleum Corp.'s No. 5 R. L. Bassham, top sand 3,562 feet, initial production 20 bbls. in one-quarter hour through open tubing, total depth 3,658 feet; No. 14 H. Hampton, top sand 3,612 feet, initial production 37 bbls. in one-half hour through open tubing, total depth 3,669 feet. Sinclair Prairie Oil Co.'s No. 26 M. Moncrief, top sand 3,558 feet, initial production 25 bbls. in one-quarter hour through open tubing, total depth 3,595 feet. Snowden and McSweeney's No. 7 M. Bonner, top sand 3,573 feet, initial production 82 bbls. per hour through open tubing, total depth 3,590 feet. Sun Oil Co.'s No. 17 Haynes, top sand 3,567 feet, initial production 59 bbls. per hour through open tubing, total depth 3,629 feet; No. 7 E. C. Schoultz, top sand 3,650 feet, initial production 36 bbls. per hour through three-quarters inch tubing choke, total depth 3,685 feet. Twin Oil Co.'s No. 9 M. Bonner, top sand 3,616 feet, initial production 75 bbls. per hour through open tubing, total depth 3,623 feet.

South Gregg County

Bay Oil Co.'s No. 3 W. Smith, top sand 3,536 feet, initial production 100 bbls. per hour through open tubing, total depth 3,558 feet. P. T. Bond's No. 3 O. Prothro, top sand 3,640 feet, initial production 75 bbls. per hour through open tubing, total depth 3,665 feet. Cranfill & Reynolds' No. 7 D. Scott, top sand 3,546 feet, initial production 80 bbls. per hour through open tubing, total depth 3,576 feet. H. W. Elliott's No. 3 A. Godfrey, top sand 3,583 feet, initial production 60 bbls. per hour in one-half hour through open tubing, total depth 3,625 feet. Galvez Oil Co.'s No. 4 M. T. Cole, top sand 3,537 feet, initial production 70 bbls. per hour through tubing, total depth 3,560 feet. Gladiator Oil Co.'s No. 5 M. T. Cole, top sand 3,562 feet, initial production 40 bbls. in one-half hour through open tubing, total depth 3,565 feet. Gulf Production Co.'s No. 6 William Clayton, top sand 3,576 feet, initial production 71 bbls. per hour through open tubing, total depth 3,666 feet. John Mabee's No. 11 M. T. Cole, top sand 3,526 feet, initial production 130 bbls. per hour through open tubing, total depth 3,540 feet.

Magnolia Petroleum Co.'s No. 8 John Radford, top sand 3,616 feet, initial production 120 bbls. per hour through open tubing, total depth 3,619 feet. Marine Production Co.'s No. 4 W. R. Crim, top sand 3,592 feet, initial production 100 bbls. per hour through open tubing, total depth 3,612 feet. Reserve Petroleum Co.'s No. 5 Rosa Brown, top sand 3,580 feet, initial production 100 bbls. per hour through open tubing, total depth 3,620 feet. Rhoads Drilling Co.'s No. 16 Sabine River, top sand 3,520 feet, initial production 50 bbls. in one-half hour through open tubing, total depth 3,542 feet; No. 16 Sabine River, top sand 3,527 feet, initial production 50 bbls. in one-half hour through open tubing, total depth 3,548 feet; No. 20 Sabine River, top sand 3,510 feet, initial production 50 bbls. in one-half hour through open tubing, total depth 3,535 feet.

Salmon Oil Co.'s No. 4 Willis Smith, top sand 3,542 feet, initial production 125 bbls. per hour through open tubing, total depth 3,573 feet. Shell Petroleum Corp.'s No. 15-A B. F. Laird, top sand 3,579 feet, initial production 37½ bbls. in one-half hour through open tubing, total depth 3,585 feet. Shultz (receiver's) No. 1 Nichols, top sand 3,680 feet, initial production 100 bbls. in 45 minutes through open tubing, total depth 3,690 feet; No. 1 Register, top sand 3,665 feet, initial production 180 bbls. per hour through open tubing, total depth 3,685 feet. Sun Oil Co.'s No. 24 M. T. Cole, top sand 3,515 feet, initial production 57 bbls. per hour through open tubing, total depth 3,545 feet. Texas Co.'s No. 22 M. T. Cole, top sand 3,497 feet, initial production 80 bbls. per hour through open tubing, total depth 3,553 feet; No. 7 Dickson, top sand 3,513 feet, initial production 75 bbls. per hour through open tubing, total depth 3,598 feet. Tide Water Oil Co.'s No. 15 Barton, top sand 3,549 feet, initial production 15 bbls. in 10 minutes through open tubing, total depth 3,565 feet; No. 24 M. B. Hughey, top sand 3,503 feet, initial production 10 bbls. per hour through open tubing, total depth 3,520 feet.

North Rusk County

Black & Stroube's No. 3 W. M. Jernigan, top sand 3,700 feet, initial production 65 bbls. in 45 minutes through open tubing, total depth 3,737 feet. East Texas Oil & Refining Co.'s No. 6 Andy Givens, top sand 3,654 feet, initial production 75 bbls. per hour through open tubing, total depth 3,675 feet; No. 12 D. Wills, top sand 3,602 feet, initial production 25 bbls. in one-quarter hour through open tubing, total depth 3,605 feet. Humble Oil & Refining Co.'s No. 101 L. D. Crim, top sand 3,581 feet, initial production 75 bbls. per hour through open tubing, total depth 3,598 feet; No. 4 M. Robinson, top sand 3,573 feet, initial production 59 bbls. per hour through open tubing, total depth 3,641 feet; No. 18 J. A. Wooley, top sand 3,623 feet, initial production 65 bbls. per hour through open tubing, total depth 3,706 feet. Luling Oil & Gas Co.'s No. 4 B. W. Brightwell, top sand 3,600 feet, initial production 85 bbls. per hour through open tubing, total depth 3,625 feet. O'Hearn Oil Co.'s No. 5 M. M. Mcmillan, top sand 3,658 feet, initial production 80 bbls. per hour through open tubing, total depth 3,679 feet. Woodley Petroleum Co.'s No. 3 J. N. Peterson, top sand 3,649 feet, initial production 35 bbls. per hour in one-quarter hour through open tubing, total depth 3,691 feet.

South Rusk County

Illinois Oil Co.'s No. 2 T. O. Mason, top sand 3,642 feet, initial production 25 bbls. per hour through open tubing, total depth 3,686 feet. Butler and Calhoun's No. 2 F. J. Cox, top sand 3,576 feet, initial production 25 bbls. per hour through open tubing, total depth 3,685 feet. Unus Oil Co.'s No. 2-B Thrash, top sand 3,665 feet, initial production 55 bbls. per hour through open tubing, total depth 3,750 feet. East Texas Oil & Refining Co.'s No. 3 F. Barksdale, top sand 3,688 feet, initial production 90 bbls. per hour through open tubing, total depth 3,725 feet; No. 4 H. Barksdale, top sand 3,672 feet, initial production 90 bbls. per hour through open tubing, total depth 3,715 feet; No. 7 Grissom, top sand 3,672 feet, initial production 75 bbls. per hour through open tubing, total depth 3,673 feet. Everett Drilling Co.'s No. 7 J. Cole, top sand 3,814 feet, initial production 50 bbls. in one-half hour through open tubing, total depth 3,817 feet. Gulf Production Co.'s No. 26 G. G. Turner, top sand 3,714 feet, initial production 50 bbls. per hour through three-fourths inch tubing choke, total depth 3,717 feet.

Humble Oil & Refining Co.'s No. 7 J. Bell, top sand 3,785 feet, initial production 75 bbls. per hour through open tubing, total depth 3,821 feet; No. 30 A. D. Blackwell, top sand 3,674 feet, initial production 70 bbls. per hour through open tubing, total depth 3,685 feet; No. 4 R. T. Cameron, top sand 3,626 feet, initial production 117 bbls. per hour through open tubing, total depth 3,725 feet; No. 6 Sol Dennis, top sand 3,724 feet, initial production 45 bbls. per hour through open tubing, total depth 3,765 feet. H. L. Hunt Production Co.'s No. 7-B Ashby, top sand 3,538 feet, initial production 20 bbls. in 80 minutes pumping, total depth 3,640 feet; No. 13-C Young, top sand 3,666 feet, initial production 27 bbls. in one-half hour through open tubing, total depth 3,728 feet. Kirby Petroleum Co.'s No. 2-A Grambling, top sand 3,600 feet, initial production 50 bbls. in 40 minutes through open tubing, total depth 3,620 feet.

Mid-Kansas Oil & Gas Co.'s No. 56 M. M. Cross, top sand 3,636 feet, initial production 32 bbls. per hour through open tubing, total depth 3,638 feet; No. 61 M. M. Cross, top sand 3,609 feet, initial production 70 bbls. per hour through open tubing, total depth 3,626 feet; No. 17 F. E. Moore, top sand 3,593 feet, initial production 22 bbls. in one-half hour through open tubing, total depth 3,669 feet. Navarro Oil Co.'s No. 3 C. Young, top sand 3,747 feet, initial production 32 bbls. in one-half hour through seven-eighths inch tubing choke, total depth 3,772 feet. Sinclair Prairie Oil Co.'s No. 7 F. B. Wilson, top sand 3,647 feet, initial production 40 bbls. in one-fourth hour through open tubing, total depth 3,658 feet. Sun Oil Co.'s No. 8 R. J. Hendon, top sand 3,519 feet, initial production 20 bbls. on pump in six hours, total depth 3,568 feet. Texas Co.'s No. 7 J. W. Turner, top sand 3,698 feet, initial production 65 bbls. per hour through open tubing, total depth 3,793 feet. Tide Water Oil Co.'s No. 6 J. R. Irion, top sand 3,690 feet, initial production 20 bbls. in one-quarter hour through open tubing, total depth 3,710 feet.

Smith County

Alex McCutcheon's No. 4 Stone, top sand 3,768 feet, initial production 35 bbls. in one-half hour through open tubing, total depth 3,773 feet. Texas Co.'s No. 12-A Jarvis, top sand 3,609 feet, initial production 77 bbls. per hour through open tubing, total depth 3,623 feet. Weaver-Crim Corp.'s No. 5 T. Stone, top sand 3,787 feet, initial production 22 bbls. in one-quarter hour through open tubing, total depth 3,789 feet.

Upshur County

Humble Oil & Refining Co.'s No. 5 May Mattox, top sand 3,674 feet, initial production 30 bbls. per hour through three-fourths inch tubing choke, total depth 3,696 feet; No. 8-B Eva O'Byrne, top sand 3,679 feet, initial production 54 bbls. per hour through three-quarters inch tubing choke, total depth 3,716 feet. Lester and Duffield's No. 7 Graves, top sand 3,646 feet, initial production 43 bbls. in one-half hour through open tubing, total depth 3,654 feet. Mudge Oil Co.'s No. 3-B S. E. Richardson, top sand 3,738 feet, initial production 75 bbls. per hour through open tubing, total depth 3,755 feet. Rancho Oil Co.'s No. 6 Meyers, top sand 3,605 feet, initial production 80 bbls. per hour through open tubing, total depth 3,647 feet. J. D. Reynolds and others' No. 4 J. T. Miller, top sand 3,778 feet, initial production 55 bbls. per hour through 1-inch tubing choke, total depth 3,781 feet. Shano Oil Co.'s No. 5-B Doby, top sand 3,804 feet, initial production 60 bbls. per hour through open tubing, total depth 3,814 feet. C. B. Stemp's No. 2 Tuttle, top sand 3,726 feet, initial production 75 bbls. per hour through open tubing, total depth 3,741 feet. Stroube & Stroube's No. 7 R. J. Mackey, top sand 3,619 feet, initial production 75 bbls. per hour through open tubing, total depth 3,628 feet. J. Z. Werby and Refugio Oil Co.'s No. 5 B. H. Reed, top sand 3,661 feet, initial production 50 bbls. per hour through open tubing, total depth

3,665 feet. J. Z. Werby and Refugio Oil Co.'s No. 7 B. H. Reed, location abandoned.

WILDCAT COMPLETIONS

Fannin County

Luther Keen and others' No. 1-A Stevens, top Austin chalk 440 feet, base 850 feet, top sand 2,334 feet, dry and abandoned, total depth 2,343 feet.

Oklahoma Allowables Fixed for November

The Oklahoma Corporation Commission has fixed the crude oil production for November in the various pools of the state as follows:

	Bbls.
CLASS A (Oklahoma City)—	
Wilcox zone	135,071
Simpson, below Wilcox	52,330
Paul line	506
Total Oklahoma City	187,907
CLASS B POOLS—	
Seminole and others	70,501
Maud	1,521
St. Louis	18,489
Asher-Wanette	2,027
Konawa	2,409
Sasakwa	1,951
Allen	8,588
Sasakwa Townsite	1,009
Calvin sand, East Earlsboro	3,021
Tatums	7,844
Fish	2,805
Total	119,265
CLASS C POOLS—	
Lucien	5,976
Keokuk Falls	747
Simpson sand, Fish Pool	360
Total	7,083
CLASS D POOLS—	
County Line	550
Crescent	100
Orlando	150
Lucien, Hunton lime	50
Total	850

The stripper wells of the state, which are estimated to have a capacity of 179,895 bbls. per day are not prorated, and this production added to the above makes a total of 495,000 bbls., the Federal oil administration's allowable.

Engineers Testing Their Skill Against Wild Well

(Continued from Page 12)

distance around for several months and extreme precautions had to be taken against the constant hazard of high gas pressures in the shallow sands.

The danger has not been eliminated but since then a number of good wells have been drilled successfully in the area, which now is drilled up. The program of relief well drilling to relieve the pressure and flood the shallow sands with water apparently proved successful, and the regulation providing for two strings of surface pipe in all wells in the area have been an additional safeguard. There have been several blowouts since the situation there was relieved but these have been in other parts of the field and some distance from that particular area.

The designation "act of God" was applied to the well originally by Col. E. O. Thompson, member of the State Railroad Commission, who has expressed the opinion that the well is beyond the control of man and not subject to any penalties for violation of proration orders. Its present production is not charged against Conroe's allowable but is deducted from the state's total allowable.

DR. A. J. BROWN DIES

PETROLIA, Ontario, Oct. 28.—Dr. A. J. Brown died on October 24 at his mother's home here. Born at Petrolia in 1884, he went to Montebello, Calif., where he was employed by the Kern River Oil Fields as a rotary driller. In 1928 he went to Peru for the International Petroleum Co. and after five months was transferred to Colombia. Owing to ill health he returned to California and later to Fayetteville. A brother, G. D. Brown, is an oil driller.

No Change in Eastern Market; Exports Dull

(Continued from Page 27)

Many refiners have contracts over the winter months which will take their entire output of distillate, gas oil and residual fuels based on plant operations in excess of the runs which will be permitted under the government program of curtailment. With this probable development in mind it is said that certain refiners have stepped up their plant operations with the view of accumulating stocks.

Prices

Price ranges on representative products at Atlantic Seaboard refineries and terminals the first of the week were largely the same as last week. At New York harbor and nearby-by points the going market for under 65 octane U. S. Motor gasoline is 6¼ and 6½ cents for the 65 octane and higher. Some material under 65 octane sold for 6 cents. This material comes from one refinery along the Atlantic Coast with occasional shipments originating at the Gulf.

In the export market sellers are maintaining a price of 6 cents for 64-66 375 aviation. The kerosene price at that point is 4¼ cents and at the eastern seaboard points 5¼ to 5½ cents. The demand for kerosene has shown some improvement with the arrival of colder weather.

The eastern market for bunker fuels continues at $1.10 and $1.95 for Diesel fuels. Price ranges on cylinder stocks are rather wide as quoted by several refiners and exporters. The No. 8 bright stock f.a.s. in barrels is quoted over a price range of 32½ to 34½ cents. The going quotation on 600 steam refined (unfiltered) is 22½ to 23½ cents.

ROCKY MOUNTAIN RUNS

Estimated daily average production for the week ending October 28 follows:

	Bbls.
WYOMING	
Salt Creek	18,590
Big Muddy	1,780
Badger Basin	40
Byron-Garland	750
Byron-East	30
Dallas Derby	330
Dutton Creek	70
Elk Basin	530
Ferris	20
Frannie	240
Grass Creek	shut in
Greybull	10
Hamilton Dome	840
Hudson	200
LaBarge	650
Lance Creek	250
Lost Soldier	1,810
Mule Creek	shut in
Midway	70
Notches	shut in
Oregon Basin	410
Osage	850
Pilot Butte	30
Rex Lake	20
Rock River	1,300
South Casper	700
Poison Spider	300
Teapot	20
Warm Springs	shut in
Total	29,840
MONTANA	
Buckley Border	300
Cat Creek	700
Cut Bank	1,020
Dry Creek	340
Kevin-Sunburst	3,520
Lake Basin	50
Pondera	710
Total	6,710
COLORADO	
Florence	310
Fort Collins and Wellington	580
Iles Dome	570
Moffat	559
Orchard	130
Rangely	100
Tow Creek	210
Total	2,450
NEW MEXICO	
Artesia	600
Cooper area	40
Empire area	0
Eunice area	980
Getty Pool	0
Hobbs	33,530
Hogback	210
Hospah	0
Jal	1,690
Lea area	2,220
Jackson	940
Maljamar	230
Rattlesnake	840
Table Mesa	80
Total	41,360
Total all fields	80,360
Total previous week	80,700
Difference	340

East Central Texas Wildcats

(Continued from Page 33)

Yount Lee Oil Co.'s No. 1 V. A. Skipper and Garner, 330 ft. from N line and 1,870 ft. from W line of survey, J. Skillern Sur. ..... Drlg. 2,346 ft.

HENDERSON COUNTY

Campbell and Champlin's No. 1 R. S. Ansley, 108 varas S and 623 varas W of NE cor. of lease, 6 miles SE of Buffalo, N. H. Thompson Sur. ..... Derrick.

Bill LaRue et al's No. 1 G. L. Smith, 330 ft. out of NW cor. of G. L. Smith 149-ac. tract, 1 mile SE of Athens, Thomas Helms Sur. ..... S.D. 4,526 ft.

HOPKINS COUNTY

Hager and Ashby's No. 1 J. Worsham, 330 ft. out of SE cor. of Worsham 161-ac. tract, 3 miles S of Sulphur Bluff, Alex. O. Wetmore Sur. ..... Derrick.

HUNT COUNTY

Meade and McKennie's No. 1 Love, 300 ft. from N line and 6,390 ft. from W line of 95-ac. tract, John Gilisky Sur. ..... Location.

H. O. Shawver et al's No. 1 J. H. Jones, 740 varas S of NE cor. and 75 varas from E line of tract, 6½ miles NE of Greenville, L. Ferguson Sur. ..... Derrick.

LEON COUNTY

Shell Petroleum Corp.'s No. 1 Beggs, center of 123.5-ac. tract, John Carter Sur. ..... Tested 16,000,000 ft. of gas; T.D. 5,743 ft.; coring ahead.

Standard Oil of Kansas' No. 1 A. W. Johnson, 466 ft. from NE line and 466 ft. from NW line of 100-ac. tract, Simon Sanches Sur. No. 7 ..... Location.

MORRIS COUNTY

Argo and Key's No. 1 Hall, 330 ft. from NW cor. of survey, 3 miles NE of Dangerfield, L. Jordan Sur.... Derrick.

Buchanan et al's No. 2 Staggers, 150 ft. from W line and 500 ft. from S line of survey, 8 miles NW of Dangerfield, John D. Nelson Sur. ..... Derrick.

RUSK COUNTY

George F. Hudson's No. 1-A Phillips, 30 ft. NE of No. 1, 3 miles E of Minden, N. Villareal Sur. ..... Drlg. 2,700 ft.

Leath and Bateman's No. 1 W. W. Hammett, 250 ft. from S line and 330 ft. from E line of survey, J. H. Sparks Sur. ..... Drlg. 1,450 ft.

P. & A. Oil Co.'s No. 2 Brightwell, 700 ft. from N line and 1,320 ft. from E line of survey, R. W. Smith Sur. ..... Waiting on cmt. to set after plugging back to 3,649 ft.

Patterson Drlg. Co.'s No. 3 Brock Estate, 2,320 ft. from N line and 100 ft. from E line of survey, R. W. Smith Sur. ..... Drlg. 3,385 ft.

SMITH COUNTY

W. L. Sessions' No. 5 Stone, 1,000 ft. from S line and 910 ft. from W line of survey, D. Shaw Sur. ..... Rig up.

UPSHUR COUNTY

S. F. Traywick et al's No. 1 M. Vaughn, 330 ft. from S line and 330 ft. from W line of 108-ac. tract, 2 miles NW of Big Sandy, P. B. Standifer Sur. ..... S.D.

VAN ZANDT COUNTY

Everett Drilling Co.'s No. 1 J. J. Goode, 1,100 ft. from E line and 330 ft. from N line of lease, W. Rose Sur. ..... Drlg. 3,149 ft.

Gray and Williams et al's No. 1 Paschall, 590 ft. from E line and 200 ft. from N line of 39-ac. tract, 5 miles NW of Jackson, D. Y'Barbo Sur. ..... Set surface csg. 88 ft

I. O. Griffin's No. 1 Bruce & Gibbard, 1,000 ft. from S line and 330 ft. from E line of 134-ac. tract, G. Martinez Sur. ..... Derrick.

Humble Oil & Refining Co.'s No. 1 J. D. Listenbee, 150 ft. out of SW cor. of W 15 acres of 30-ac. tract, John Goodman Sur. ..... Location.

Humble Oil & Refining Co.'s No. 1 S. R. Ray, 150 ft. S and W of SW cor. of J. D. Listenbee 30-ac. tract in Nacogdoches County School Lands Sur. ..... Location.

Pure Oil Co.'s No. 5 J. J. Murphree, 250 ft. S of N line and 200 ft. E of W line of J. J. Murphree 82.5-ac. tract, John Walling Sur. ..... Waiting on cmt. to set 2,972 ft.

Pure Oil Co.'s No. 3 R. M. Butler, 900 ft. S of N line and 987 ft. W of R. M. Butler 89.16-ac. tract, Davis Rose Sur. ..... S.D. 310 ft.

George Ray et al's No. 1 C. Wilson, 1,100 ft. from S line and 2,420 ft. from W line of 172-ac. tract and survey, 6 miles W of Myrtle Springs, H. Cotes Sur. .. S.D. 3,877 ft.

Ray Drilling Co.'s No. 1 J. W. Mallory, 1,150 ft. from S line and 150 ft. from W line of 317-ac. tract. John Walling Sur. ..... Derrick

Wildcat Operations in West Texas

(Continued from Page 38)

Southern Oil Co.'s No. 1-A Pardue, 2,310 ft. from S and 990 ft. from E lines of Sec. 202, B.B.B.&C. Sur. ... Drlg. 2,715 ft.

Texas Co.'s No. 3 T. A. Jean, 165 ft. N of S line and 330 ft. E of W line of E half Sec. 201, Blk. 1, B.B.B.&C.Ry. Sur. ..... Mudding 8-in. csg. at 2,720 ft.; T.D. 2,748 ft.

Texas-Inland Oil Co.'s No. 1 First National Bank of Hamlin, 590 ft. N and 330 ft. W of SE cor. of W half NE Sec. 191, B.B.B.&C.R.R. Sur. ..... Rig up.

GAINES COUNTY

R. H. Gill et al's No. 1 Crews, 1,320 ft. from S and 1,320 ft. from W line of Sec. 9, Blk. A-20, P.S.L. Sur... Location

GLASSCOCK COUNTY

Humble Oil & Ref. Co.'s No. 3 Arrington, 330 ft. from N line and 330 ft. from E line of Sec. 21, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Noble Drlg. Co.'s No. 3 Baker, 330 ft. from N line and 330 ft. from E line of Sec. 21, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Schermerhorn Oil Co.'s No. 6 Kloh, 330 ft. from S line and 1,980 ft. from E line of Sec. 13, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ..... Show of oil 2,400-20 ft.; swabbed 100 bbls. in 1 hr.; preparing to pump; T.D. 2,495 ft.

Simms Oil Co.'s No. 2-A Coffee, 330 ft. from S line and 990 ft. from W line of Sec. 15, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Tribal Oil Co.'s No. 5-B Edwards, 330 ft. from S line and 330 ft. from E line of Sec. 6, Blk. 33, Twp. 2s, T.&P. Sur. ..... T.D. 620 ft.

H. O. Wootin's No. 2-A W. P. Edwards, 660 ft. from S line and 660 ft. from E line of Sec. 17, T.&P.R.R. Sur., Blk. 33, Twp. 2s ..... Drlg. 2,200 ft.

HOWARD COUNTY

Continental Oil Co.'s No. 3 Settles, 1,980 ft. from N line and 1,625 ft. from W line of Sec. 133, Blk. 29, W.&N.W. Sur. ..... Moving in machine to drill in; T.D. 2,235 ft.

Group No. 1 Oil Co. and Continental Oil Co., 2,640 ft. from N line and 1,980 ft. from E line of Sec. 5, T.&P.R.R. Sur., Blk. 32 ..... Drlg. 1,345 ft.

L. C. Harrison et al's No. 2 Texas Land & Mortgage Co., 2,310 ft. from E line and 330 ft. from the S line of Sec. 4, T.&P.R.R. Sur., Blk. 30, Twp. 1s ..... Location

Plymouth Oil Co.'s No. 9 Kloh et al, 2,640 ft. from the N. line and 1,980 ft. from W line of Sec. 5, Blk. 33, T.&P.R.R. Sur., Twp. 2s ..... Drlg. 755 ft.

Schermerhorn Oil Co.'s No. 1 Kloh, Sec. 3, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Joe Rusk et al's No. 2 G. M. Dodge Estate, 330 ft. from N line and 2,310 ft. from the E line of Sec. 9, H.&T.C.R.R. Sur., Blk. 30, Twp. 2s ..... Cellar and pit.
Sinclair Prairie Oil Co.'s No. 9 Dodge, 310 ft. from N line and 1,625 ft. from W line of Sec. 11, Blk. 30, Twp. 1s, T.&P.R.R. Sur. ..... Spudding.
Southern Oil Co.'s No. 1 Denman, 2,310 ft. from N line and 330 ft. from W line of Sec. 10, Blk. 30, Twp. 1s, T.&P.R.R. Sur. ..... Bldg. derrick.
Southern Oil Co.'s No. 1 Denman, 1,650 ft. from N line and 330 ft. from W line of Sec. 14, Blk. 30, Twp. 1s, T.&P.R.R. Sur. ..... Bldg. derrick.
Ungren & Frazier's No. 1 Davis, 330 ft. from S line and 990 ft. from W line of Sec. 2, Blk. 30, Twp. 1s, T.&P. Sur. ..... T.D. 560 ft.

IRION COUNTY

R. D. Covington's No. 1 Mitchell, 150 ft. from S line and 150 ft. from W line of Sec. 724, C. Wimsch Sur. ..... Fishing 1,282 ft.
Parry Fox's No. 1 Reach, 170 ft. E and 45r ft. S of the most southerly NW cor. of Sec. 1,026, H.E.&W.T. Sur. ..... Drlg. 850 ft.

JONES COUNTY

Dyer's No. 1 Odom, 200 ft. from S and 170 ft. from W of N 320 acres, G. Zumwalt Sur. ..... Drlg. 2,050 ft.
Roseer & Pendleton's No. 1 W. H. Evans, 300 ft. N and 2,100 ft. E of SW cor. of E 101 acres of N 202 acres of Sec. 4, Blk. 15, T.&P.R.R. Sur. ..... Drlg. 1,070 ft.

LOVING COUNTY

R. L. Allen's No. 1 fee, 4,290 ft. from NE line, 330 ft. from SE line, Sec. 82, H.&T.C. Sur. ..... Location.
R. L. Allen's No. 2 fee, 4,290 ft. from NE line, 990 ft. from SE line, Sec. 82, Blk. 33, H.&T.C. Sur. ..... Location.
R. L. Allen's No. 3 fee, 4,290 ft. from NE line, 990 ft. from NW line, Sec. 82, Blk. 33, H.&T.C. Sur. ..... Location.
R. L. Allen's No. 4 fee, 4,290 ft. from NE line, 330 ft. from NW line, Sec. 82, Blk. 33, H.&T.C. Sur. ..... Location.
Eppenauer Drlg. Co.'s No. 1-C Allen, 330 ft. from NW line, 2,310 ft. from SW line, Sec. 90, Blk. 1, W.& NW Sur. ..... Location.
Eppenauer Drlg. Co.'s No. 1-A Victor, 330 ft. from SW and 330 ft. from SE of NW of N half Sec. 4, Blk. 2, W.&N.W. Sur. ..... Rigging up standard tools

PECOS COUNTY

Mae T. Anderson's No. 1 E. M. Roots Estate, 2,500 ft. from the N line and 330 ft. from W line of Sec. 11, G.C.&S.F.R.R. Sur., Blk. 118 ..... Drlg. 385 ft.
M. E. Black et al's No. 1 E. E. Powell et al, 150 ft. from NE line and 150 ft. from SE line of Sec. 102, H.&G.M.R.R. Sur., Blk. 10 ..... Drlg. 325 ft.
M. D. Bryant's No. 1 Robertson, 375 ft. S and 150 ft. E from NW cor. of Robertson Sur. (this well is east offset to Mid-Kansas Oil & Gas Co.'s No. 23 Smith-Taylor) ..... S.D. 1,187 ft.
Culberson Bros.'s No. 15-B Monroe, 725 ft. from N line and 1,380 ft. from E line of Sec. 39, Blk. 194, G.C.&S.F.R.R. Sur. ..... Location.
Easter-McCurdy's No. 1-A Smith, 840 ft. from S line and 1,030 ft. from E line of Sec. 27, Blk. 149, G.C.&S.F. Sur. ..... Location.
Humble Oil & Refining Co.'s No. 1 White, Baker, 1,320 ft. from N and E lines of Sec. 44, Blk. Z, T.C. Sur. ..... Running csg. 5,159 ft.
Kemper & Kimberlin et al's No. 2 D. B. Gregg et al, 2,490 ft. from NW line and 1,470 ft. from NE line of Sec. 101, H.&G.M.R.R. Co. Sur., Blk. 10 ..... Location.
Mid-Kansas O. & G. Co.'s No. 18 Smith-Taylor, 1,296 ft. from S line, 1,320 ft. from W line, Sec. 33, G. C.&S.F. Sur., Blk. 194 ..... Location
Mid-Kansas Oil & Gas Co.'s No. 21 Smith-Taylor, 1,700 ft. from S line and 375 ft. W of northerly NW cor. of Fred Turner, Jr., Sur., but located in Sec. 33, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 1,258 ft.
Mid-Kansas Oil & Gas Co.'s No. 22 Smith-Taylor, 2560 ft from S line and 324 ft. from W line of NW cor. of Fred Turner, Jr., Sur. No. 2, but located in Sec. 33, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 1,362 ft.
Mid-Kansas Oil & Gas Co.'s No. 23 Smith-Taylor, 332 ft. S of N line of Sec. 33 and 160 ft. from W line of Robertson Sur., Sec. 33, Blk. 194, G.C.&S.F.R.R. Sur... Drlg. 1,250 ft.
Mid-Kansas Oil & Gas Co.'s No. 35-A, 250 ft. from N line and 324 ft. from E line of NW cor. of Fred Turner, Jr., Sur. No. 2, but located in I. G. Yates Sur., A-8195. ..... Drlg. 1,020 ft.
Sproles & O'Neal's (rec.) No. 2-A Fred Turner, Jr., 194 ft. from N line, 300 ft. from W line of Fred Turner, Jr., Sur. No. 1 ..... Location.
Sproles & O'Neal's (rec.) No. 4-A Fred Turner, Jr., 1,640 ft. from N line, 250 ft. from W line of Fred Turner, Jr., Sur. No. 1 ..... Drlg. 1,166 ft.
Sproles & O'Neal's (rec.) No. 5-A Fred Turner, Jr., 250 ft. from N, 250 ft. from W of C SE cor. of Fred Turner, Jr., Sur. No. 1 ..... Location
Sproles & O'Neal's No. 7-A Fred Turner, 250 ft. from S line, 250 ft. from W line of Fred Turner, Jr., Sur. No. 1 ..... Location.
Sproles & O'Neal's No. 8-A Fred Turner, Jr., 560 ft. from S line, 550 ft. from E line of Fred Turner Jr., Sur. ..... Location.
Sproles & O'Neal's No. 1-B Fred Turner, Jr., 250 ft. from N line, 308 ft. from E line of Fred Turner, Jr., Sur. ..... Flowed 1,920 bbls. per hour; T.D 1,428 ft.
Sproles & O'Neal's No. 3-B Fred Turner, Jr., 356 ft. from S line, 250 ft. from W line of Fred Turner, Jr., Sur. ..... Location
Sproles & O'Neal's No. 4-B Fred Turner, Jr., 717 ft. from S line, 250 ft. from E line of Fred Turner, Jr., Sur. No. 2 ..... Location
Sproles & O'Neal's No. 1-C Fred Turner, 250 ft. from N line, 250 ft. from W line of Fred Turner, Jr., Sur. ..... Location
Trans-Texas Oil Co.'s No. 1 C. M. Anderson, 330 ft. from the S line and 330 ft. from the E line of Sec. 27, Blk. 50, Twp. 9, T.&P.R.R. Sur. ..... Spudded and S.D.

REAGAN COUNTY

Big Lake Oil Co.'s No. 12-C University, 928 ft. from N, 740 ft. from E line of Sec. 12, Blk. 2, University land ..... Drlg. 8,515 ft.
Big Lake Oil Co.'s No. 14-C University, 725 ft. from S line and 2,730 ft. from E line of Sec. 25, Blk. 9, University Land Sur. ..... Rig up rotary.
Big Lake Oil Co.'s No. 15-C University, 660 ft. from E line and 660 ft. from S line of Sec. 35, Blk. 9, University Land Sur. ..... Rig up.
Continental Oil Co.'s No. 9-B University, 1,980 ft. from S line, 1,305 ft. W of E line of Sec. 39, Blk. 9, University Land Sur. ..... Drlg. 8,695 ft.

RUNNELS COUNTY

Agnew et al's No. 1 H. B. Fowler, 150 ft. S and W of NE cor. of Sec. 23, N. Travis Sur. No. 533 ..... Drlg. 1,150 ft.
Golden Pet. Co.'s No. 3 McMillan, Subdv. 32, N. Travis Sur. ..... Drlg. 640 ft.
B. C. Mann et al's No. 1 H. E. Wade, 150 ft. from S and 1,650 ft. from W line, Subdv. No. 8, Norvel Travis Sur. No. 533 ..... Drlg. 1,100 ft.

UPTON COUNTY

Gulf Prod. Co.'s No. 103 McElroy, 1,980 ft. from S and 660 ft. from W, Sec. 197, Blk. F, C.C.S.D.&R.G.N.G.... Drlg. 7,420 ft.

WARD COUNTY

Abell Brothers' No. 1 Archenhold et al, 2,310 ft. from NE line and 330 ft. from SE line of Sec. 23, H.&T.C Sur., Blk. 5 ..... S.D. 2,262 ft.
Atlantic Oil & Prod. Co.'s No. 2 Blank-Camp, 2,310 ft. from NW line and 2,310 ft. from SW line of Sec. 14, Blk. 34, H.&T.C. Sur. ..... Location.
Atlantic Oil & Prod. Co.'s No. 4 W. D. Johnson, 330 ft. from NE line and 990 ft. from SE line of NE half of Sec. 9, H.&T.C. Sur., Blk. 34 ..... Drlg. 2,467 ft.
Atlantic Oil & Prod. Co.'s No. 9 Johnson, 330 ft. from NE line and 990 ft. from NW line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... T.D. 1,491 ft.
Atlantic Oil & Prod. Co.'s No. 10 Johnson, 990 ft. from NE line and 330 ft. from NW line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... Location.
Atlantic Oil & Prod. Co.'s No. 11 Johnson, 2,310 ft. from NE line and 1,650 ft. from SE line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... Location.
Atlantic Oil & Prod. Co.'s No. 12 Johnson, 990 ft. from SE line and 990 ft. from NE line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... Location.
Atlantic Oil & Prod. Co.'s No. 13 Johnson, 330 ft. from NE line and 330 ft. from SE line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... Location.
Atlantic Oil & Prod. Co.'s No. 14 Johnson, 330 ft. from NE line and 2,310 ft. from NW line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... Location.
Atlantic Oil & Prod. Co.'s No. 15 Johnson, 330 ft. from SE line and 1,650 ft. from NE line of Sec. 9, Blk. 34, H.&T.C. Sur. ..... Location.
George Bentley et al's No. 1 C. Bergman, 330 ft. from NE line and 2,310 ft. from NW lines of Sec. 26, Blk. 5, H.&T.C. Sur. ..... T.D. 2,650 ft., plugged back to 2,470 ft., fishing.
George Bentley et al's No. 1 A. Emory, 1,830 ft. from NE line and 2,310 ft. from NW line of Sec. 26, Blk. 5, H.&T.C. Sur. ..... T.D. 2,301 ft
California Oil Co.'s No. 1 J. F. York, 330 ft. from NW line and 330 ft. from SW line of Sec. 10, Blk. 34, H.&T.C. Sur. ..... Drlg. 1,135 ft.
Eastland Oil Co.'s No. 2 Johnson, 1,980 ft. from SE line and 1,980 ft. from SW line of Sec. 24, Blk. 34, H.&T.C. Sur. ..... Drlg. 2,240 ft.
Eppenauer Drlg. Co.'s No. 1 University, 330 ft. from N and 440 ft. from E of S half of Blk. 16 ..... T.P. 2,545 ft.; flowed 70 bbls. Oct. 27; T.D. 2,730 ft.
Gulf Prod. Co.'s No. 22 Hutchings, 330 ft. from N line and 330 ft. from W line of Sec. 4, Blk. F, G.M.M. B.&A. Sur. ..... Drlg. 2,400 ft.
Gulf Prod. Co.'s No. 27 O'Brien, 990 ft. from N line and 330 ft. from E line of Sec. 17, Blk. F, G.&M.M.B.&A. Sur. ..... Drlg. 435 ft.
Gulf Prod. Co.'s No. 36 O'Brien, 330 ft. from N line and 330 ft. from E line of Sec. 17, Blk. F, G.M.M.B.&A. Sur. ..... Drlg. 2,500 ft.
Gulf Prod. Co.'s No. 38 O'Brien, 990 ft. from S line and 990 ft. from E line of Sec. 16, Blk. F, G.&M.M. B.&A. Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 1 University, 990 ft. from N line and 440 ft. from E line of Sec. 2, Blk. 16, University Sur. ..... Location.
Jack Leidecker et al's No. 1 A. Archenhold et al, 2,310 ft. from NE and 2,310 ft. from NW line of Sec. 23, H.&T.C.R.R. Sur., Blk. 5 ..... T.P. 2,520 ft.; increase 2,543-48 ft.; flowed 450 bbls. in 24 hrs.; T.D. 3,070 ft.
Rector Oil Co. et al's No. 1 Monroe, 660 ft. from NE and SE, Sec. 62, Blk. 33, E.&T.C. Sur. ..... S.D. 4,661 ft.
Simms Oil Co.'s No. 1 Massey, 2,310 ft. from SW line and 2,310 ft. from SE line of Sec. 14, Blk. 34, H.&T.C. Sur. ..... Location.
Sinclair Prairie Oil Co.'s No. 3 H. Archenhold, 330 ft. from NE lines and 330 ft. from SE lines of SW of Sec. 23, H.&T.C. Sur., Blk 5 ..... Drlg. 770 ft.
Thompson's No. 1 Jackson, 2,310 ft. from SW line and 1,650 ft. from SE line of Sec. 9, Blk. 34, H.&T.C. Sur... Location.

WINKLER COUNTY

Magnolia Pet. Co.'s No. 1 Scarborough, 1,650 ft. from N line and 330 ft. from W line of Sec. 1, Blk. 77, P.S.L. Sur. ..... Location.
Richardson et al's No. 1-D Scarborough, 990 ft. from N line and 1,650 ft. from E line of Sec. 18, Blk. 74, P.S.L. Sur. ..... Drlg. 1,350 ft.
Sinclair Prairie Oil Co.'s No. 3 W. F. Scarborough, 1,650 ft. from E line and 1,990 ft. from N line of Sec. 1, Blk. 17, P.S.L. Sur. ..... Drlg. 95 ft.
L. H. Wentz' No. 1 Daugherty, 330 ft. from N and 330 ft. W of Sec. 1, Blk. C-13, P.S.L. Sur ..... Location

Wildcat Operations in Texas Panhandle

Week Ending October 30

CARSON COUNTY

Company, well, farm name, section and block— Remarks:
Reiger et al's No. 1 Foster, 330 ft. from N and E lines of SW Sec. 93, Blk. 7, I.&G.N.R.R. Sur. ..... U.R. at 990 ft.

GRAY COUNTY

Anderson & Bean's No. 3 J. C. Vollmert, 330 ft. from S line, 330 ft. from E line, SW Sec. 140, I.&G.N. Sur., Blk. 3 ..... Cellar.
Cambrian Oil Co.'s No. 2 G. Cole, 330 ft. from S line, 330 ft. from W line, SW Sec. 105, I.&G.N. Sur., Blk. 3 ..... Drlg. 2,890 ft.
Chism et al's No. 1 J. M. Carpenter, 330 ft. from N line, 330 ft. from E line of SE Sec. 37, H.&G.N. Sur., Blk. 25 ..... Fishing 2,846 ft.
Gulf Prod. Co.'s No. 5 Ellis Cockrell, 330 ft. from N and E lines of S½ Sec. 2, Blk. M-21, T.C.R.R. Sur... Location.
Hencron et al's No. 1 Hasselby, 330 ft. S and E, SW SW Sec. 11, Blk. A-9, H.&G.N. Sur. ..... Rig.
Mazda-Shell's No. 4 Coombs-Worley, 990 ft. from N line, 330 ft. from E line, Sec. 35, Blk. 3, I.&G.N. Sur. Rig.
Phillips Pet. Co.'s No. 7 Jackson, 990 ft. from E, 330 ft. from S lines of S½ SE Sec. 58, Blk. 2-B, I.&G.N. Sur. ..... Drlg. 3,124 ft.; T.P. 2,967-3,124 ft.
Phillips Pet. Co.'s No. 1 Benton, 360 ft. N, 345 ft. W from E lines of W½ E½ Sec. 63, Blk. 3, I.&G.N. R.R. Sur. ..... T.D. 3,253 ft.; shot 120 qts. 2,200-47 ft.; 1,100 ft. of oil in hole; will put on pump.
Skelly Oil Co.'s No. 5 Vicara, 440 ft. from N, 330 ft. from W line of E½ NW Sec. 127, Blk. 3, I.&G.N. R.R. Sur. ..... C.O.; put on pump; T.D. 3,283 ft.
Southern Pet. Explin. Co.'s No. 5 McConnell, 330 ft. from N, 990 ft. from W lines of NW Sec. 174, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,510 ft.
Sun Oil Co.'s No. 2-B Combs-Worley, 330 ft. from S line, 990 ft. from E line of SW of Sec. 34, I.&G. N. Sur., Blk. 3 ..... Rig up standard tools 3,934 ft.
Vulcan Oil Co.'s No. 1 M. H. Kinard, 330 ft. from N line, 330 ft. from W line, SW Sec. 41, H.&G.N. Sur., Blk. 25 ..... Spudding.
F. H. Yealy's No. 2 Crank, 960 ft. from N and E lines of N 160 acres of W 400 acres of Sec. 163, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 1,770 ft.

HUTCHINSON COUNTY

Huber Pet. Corp.'s No. 1-A Huber Dunaway, 330 ft. from S, 990 ft. from E lines of S 200 acres of Sec. 7, Blk. Y-a, T.C.R.R. Sur. ..... Drlg. 1,060 ft.

RANDALL COUNTY

Woolsey & Devore's No. 1 Belew, 330 ft. N, 1,320 ft. E of NE, Sec. 85, Blk. 2, A.B.&M. Sur. ..... S.D. 4,327 ft.

Kansas Has Lowered Its Crude Oil Output to the Quantity Allotted It by Secretary Ickes

By JAMES McINTYRE

While the estimated production of crude oil in Kansas in the week ending October 28 was 111,755 bbls., the proration department of the Kansas Corporation Commission estimates that in the latter days of the week the production was down to 85,000 bbls. per day. Kansas has been required to make up September overproduction and to do this it must average 87,000 bbls. per day for a period sufficient to compensate for the overage.

Field work in Kansas has not yet responded to the higher prices for crude, as its neighbor Oklahoma has done. Little new work has been started recently and not much new leasing is reported.

Roy Hall has assembled a block of leases, including all of Sections 31 and 32-27-5w; all of Section 36-27-6w; all of Sections 5, 6, 7, 8 and 18-28-5w, and the NW of Section 17-28-5w; all of Sections 1 and 12-28-6w; N half NW and E half Section 13-28-6w, and is trying to work up a community test. The acreage is all in Kingman County.

Seismograph work is being done by the Amerada Petroleum Corp. Empire Oil & Refining Co., Gypsy Oil Co., Wentz Oil Corp. and Continental Oil Co. in central Kansas from the Oklahoma state line upward.

Harris & Haun and others are about to start an important wildcat test near Goundridge, in southern McPherson County, which will be watched closely. The location is in the SW cor. of Section 12-21-2w, 6 miles south of the Canton Field. A number of companies, including Phillips Petroleum Co., The Texas Company and Shell Petroleum Corp., are owners of acreage in the block.

Production of Pools

Following is the estimated daily production of some of the more prominent pools and fields in Kansas in the week ending October 28 and the previous week:

Pool or field—	Oct. 28	Oct. 21
Hollow	7,250	7,734
Ritz-Canton	17,920	18,265
Voshell	6,120	6,440
Sedgwick County	8,750	9,375
Nikkell	3,195	3,304
Ellsworth County	2,960	3,710
Rice County	4,837	7,498
Barton County	191	497
Reno County	1,237	1,436
Ellis County	413	459
Kingman County	412	500
Stafford County	937	823
Russell County	3,510	2,855
Greenwood County	11,350	11,300
Butler County	17,970	18,250
Other pools	23,693	22,344
Total	111,755	114,290

Harvey County

Shell Petroleum Corp.'s No. 1 V. Neufeldt, 8E SW NW Section 8-22-3w, Hollow Pool, Harvey County, flowed 335 bbls. of oil in 13 hours, together with gas at the rate of 3,000,000 feet per day.

Hollow and others' No. 4 Schmidt, NW SE NW Section 17-22-3w, was treated with acid in Hunton lime at 3,428-57 feet, and the well flowed and swabbed 1,320 bbls. in 24 hours.

Mid-Kansas Oil & Gas Co.'s No. 6 Duerkson, SE NE NE Section 19-22-3w, pumped 1,123 bbls. in 24 hours. It had been acidized in Hunton lime at 3,454-85 feet.

Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 4 Froese, NW cor. Section 20-22-3w, swabbed 575 bbls. in 24 hours from Hunton lime at 3,468-88 feet. It may be acidized.

Magnolia Petroleum Co.'s No. 3 Schmidt, NW NE Section 30-22-3w, was acidized in Hunton lime at 3,333-58 feet. It swabbed 7 bbls. per hour.

L. H. Wentz's No. 1 Bestvater, SW SE SW Section 8-22-1e, a wildcat in northeastern Harvey County, got a hole full of water in chat at 2,972-87 feet, total depth 3,025 feet, and the test was abandoned.

New work started in Harvey County includes J. E. Mabee, Inc., and Shell Petroleum Corp.'s No. 1 Nikkell-A, SW SE SW Section 8-22-3w, set pipe at 430 feet; Shell Petroleum Corp.'s No. 4 Schmidt, SW cor. Section 17-22-3w, drilling at 890 feet.

McPherson County

J. E. Mabee, Inc., and Shell Petroleum Corp. acidized No. 2 Nikkell, SE NE SW Section 33-21-3w, in the Nikkell Pool, McPherson County, an old well drilled 4 feet deeper to 3,478 feet. It responded with a production of 1,128 bbls. in 24 hours on the pump.

Cartwright & Prunty's No. 1 Jones, SE SW NW Section 26-19-3w, was abandoned as dry at 3,370 feet. The hole filled with water. Top of the chat was at 3,109 feet, salt water appeared at 3,175-81 feet.

Paramount Oil Co. and others' wildcat, No. 1 Steinkirchner, NE SE SE Section 25-19-1w, had a hole full of water at 2,939-50 feet. The crew was straightreaming the hole.

Spitz and others' No. 1 Bair,, NW SW SE Section 29-19-1w, pumped 105 bbls. in 18 hours and was pumped off, the oil coming from chat at 2,953-83 feet. Later it flowed by heads at the rate of 15 bbls. per day at a total depth of 3,001 feet. It was drilling at 3,002 feet.

Lario Oil & Gas Co. and Shell Petroleum Corp.'s No. 1 Lagree, NW cor. Section 31-19-1w, pumped 175 bbls. in 24 hours, after an acid treatment. It had been deepened 8 feet from 3,420 feet, in Viola lime.

Sinclair Prairie Oil Co.'s No. 2 Stucky, C E half E half SE Section 28-20-3w, is a rig; Gypsy Oil Co.'s No. 3 Stucky, SW SE NE Section 33-20-3w, a location; Sinclair Prairie Oil Co.'s No. 6 McCurdy, SE NE SE Section 33-20-3w, drilling at 208 feet; Shell Petroleum Corp.'s No. 5 Meyers-B, SE cor. Section 14-19-2w, drilling at 675 feet; Youker and others' No. 7 Eaton, NW NE NE Section 26-19-2w, rigging up standard tools; Phillips Petroleum Co. and Shell Petroleum Corp.'s No. 4 Garrett, NE NW NE Section 30-19-1w, rigging up rotary.

Reno County

Olson Oil Co. and Shell Petroleum Corp.'s No. 2 Gorwin, C NW SE Section 35-23-4w, in eastern Reno County, was completed as a gas well. It is good for 4,000,000 feet of gas in 24 hours, from chat at 3,262 feet, total depth 3,320 feet.

Ellsworth County

Stanolind Oil & Gas Co.'s No. 1 Andrea, C SE SE Section 8-20-11w, Breford Pool, Ellsworth County, was acidized in Siliceous lime at 3,314-45 feet. It pumped 30 bbls. in eight hours. It was completed.

Hillgoss and others' No. 2 Isern, SW NE NE Section 12-20-11w, Isern Pool, pumped 140 bbls. in 24 hours, from Siliceous lime at 3,318-41 feet. It is a completion.

Rice County

National Refining Co. and Barnsdall Oil Co.'s No. 1 Reese, NE SW SW Section 16-19-2w, Rice County, swabbed 6 bbls. per hour from pay at 3,205 feet, total depth 3,255 feet, but it will be deepened.

Gypsy Oil Co.'s No. 1 Kennedy, 330 feet north and 1,006 feet west of SE cor. Section 31-19-9w, Chase townsite, pumped 428 bbls. in 12 hours from Siliceous lime at 3,250-56 feet. It was completed.

Ramsey and others' No. 1 Saint, SE NE SE Section 31-19-9w, had not yet had its potential test. It pumped 85 bbls. per hour from Siliceous lime at 3,226-36 feet. Previously it had swabbed 418 bbls. in four hours.

Gypsy Oil Co. will acidize No. 1 Lisk, NW NE SW Section 32-19-9w, which swabbed 4 bbls. per hour from Siliceous lime at 3,237-71 feet and is holding No. 1 Rife, SW cor. Section 32-19-9w, for potential test. It swabbed 22 bbls. per hour from Siliceous lime at 3,250-57 feet.

Ramsey Brothers' No. 3 Smith, Block 12, Chase townsite, SW Section 32-19-9w, got Siliceous lime at 3,239-57 feet and swabbed 960 bbls. in 24 hours. It had not been given a potential test.

Sedgwick County

Wentz and others have started drilling on their wildcat test, No. 1 Stockamr, SW NE Section 31-26-2w, Sedgwick County.

Acid did not help Skelly Oil Co. and Solar Oil Co.'s No. 15 Wilson, C SW NE Section 1-26-1w, which pumped 7 bbls. per hour from sand at 2,570-75 feet.

Derby Oil Co. was trying to make a producer in a shallower horizon out of its No. 4 Gorman, NW SW NW SW Section 6-26-1e. Its old total depth was 3,367 feet. It was plugged back to 3,200 feet and shot with no results and was plugged back to 3,122 feet, and will be shot again.

Shell Petroleum Corp. did not acidize its No. 8 Lygrisse, in Section 15-26-2e, which was reported last week as producing 1,052 bbls. in 24 hours on the pump, and from Viola lime. It was completed.

Cowley County

M. B. Armer and others' No. 1 Winfield Investment Co., SE SW SE Section 22-32-4e, Cowley County, an old well drilled deeper from 3,301 feet to 3,330 feet, was acidized and put on the pump. It made 27 bbls. of oil and 100 bbls. of water in 24 hours.

McNabb and others' No. 4 Hutto, in Block 4, Winfield townsite, NE Section 22-32-4e, was abandoned. It produced some oil and water in Siliceous lime at 3,365-68 feet.

Roth & Faurot and Empire Oil & Refining Co. have started drilling No. 1-A Brown, SE NE NE Section 13-31-7.

Greenwood County

Mendenhall and others' No. 2 Hollister, SW SE SE Section 5-25-13, Greenwood County, is a 15-bbl. well from sand at 1,491-1,515 feet.

Markus & Gore took a potential test on their No. 3 Smith, NW SW NE Section 6-24-12, and it made 90 bbls. in 24 hours on the pump. It had been shot with 200 quarts and had later swabbed

(Continued on Page 71)

Wildcat Operations in Kansas

Week Ending October 28

(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks
BARTON COUNTY	
Atlantic O. P. Co.'s No. 1 Schneider, C NE SW Sec. 15-20-13w	Drlg. 2,551 ft.
Gypsy Oil Co.'s No. 1 Soderstrom, SE NE NW Sec. 21-17-13w	Drlg. 1,860 ft.
Helmerich & Payne's No. 1 Everleigh, C SW SE Sec. 13-18-13w	T.D. 3,490 ft.; fishing.
Skelton et al's No. 1 Ott, C SE SE Sec. 16-19-14w	O.W.D.D.; T.D. 3,706 ft.; bailing.
Sinclair Prairie Oil Co.'s No. 1 Redetzke, NE SE Sec. 9-16-11w	Rigging up.
COWLEY COUNTY	
Yarnell et al's No. 1-A Speer, SE NE NE Sec. 31-33-6e	U.R. 6-in. csg.; T.D. 2,210 ft.
Van Meter et al's No. 1 Moore, NE cor. Sec. 5-35-4	S.D. 500 ft.
EDWARDS COUNTY	
Atlantic Oil Prod. Co.'s No. 1 Bradbridge, C SE NW Sec. 1-24-16w	Drlg. 3,710 ft.
FINNEY COUNTY	
National Ref. Co. et al's No. 1 Smith, C SE SW Sec. 2-22-33w	Drlg. 2,322 ft.
HARVEY COUNTY	
Holbart Oil Co.'s No. 1 Harder, SE SW SE Sec. 11-23-1e	T.D. 3,030 ft.; U.R. csg.
Holbart Oil Co.-Shell Pet. Corp.'s No. 1 Gingras, NE SW Section 8-24-1e	C.O. 2,690 ft.
L. H. Wentz' No. 1 Bestvater, SW SE SW Sec. 8-22-1e	Dry and abnd. 3,034 ft.
KINGMAN COUNTY	
Olson and Skelly Oil Co.'s No. 1 Emery, C SW NW Sec. 32-25-4w	Set 8-in. 3,509 ft.; T.D. 3,514 ft.
Regina O. & G. Co. et al's No. 1 Wilson, NW NE Sec. 26-25-5w	Drlg. 3,690 ft.
McPHERSON COUNTY	
Dieter et al's No. 1 Carlson, SE cor. Sec. 4-19-3w	T.D. 3,122 ft.; swaging.
Regina O. & G. Co.'s No. 1 Vogts, C SE SE Sec. 8-20-1w	T.D. 3,390 ft.; fishing.
Jim Madison's No. 1 Boesker, SE NW Sec. 29-20-1w	Spudded.
Paramount Oil Co.'s No. 1 Steinkirchner, NE SE SE Sec. 25-19-1w	H.F.W. 2,950 ft.
RENO COUNTY	
Roth & Faurot's No. 1 Yoder, C NW NW Sec. 15-24-5w	Drlg. 2,195 ft.
RICE COUNTY	
Atlantic Oil Prod. Co.'s No. 1 Brandenstein, C SE SE Sec. 16-19-10w	Drlg. 1,400 ft.
Danciger et al's No. 1 Roesler, SW NE Sec. 11-18-10w	Drlg. 2,220 ft.
El Dorado Ref. Co.'s No. 1 Wernet, SW NE Sec. 12-20-6w	Drlg. 1,040 ft.
Elmer Corn et al's No. 1 Hunter, NE cor. Sec. 35-19-7w	Rig on ground.
Langston et al's No. 1 Markle, NE SW Sec. 1-20-9w	Ponds.
RUSSELL COUNTY	
Western Exploration Co.'s No. 12 Durr, SW cor. Sec. 20-15-12w	Drlg. 450 ft.
Western Exploration Co.'s No. 1 Andrea, SW cor. Sec. 30-15-12w	Drlg. 450 ft.
SALINE COUNTY	
Lario Oil & Gas Co.'s No. 1 Burrell, NW SW Sec. 15-14-2w	Rigging up.
SEDGWICK COUNTY	
Wentz et al's No. 1 Stockamr, SW NE Sec. 31-26-2w	Drlg. 605 ft.
STAFFORD COUNTY	
Atlantic Oil Prod. Co.'s No. 1 Willinger, C NE NE Sec. 18-23-11w	Drlg. 360 ft.

South St. Louis Area and Crescent Pool Have Big Wells; Production Down to Allotment

By JAMES McINTYRE

The South St. Louis Pool, in Pottawatomie County, Oklahoma, was again brought into prominence with a big well in the past week. The Amerada Petroleum Corp.'s No. 2 Harrison, NE NW SW Section 33-7-4, flowed 5,753 bbls. in 24 hours, following a 1,000-gallon acid treatment. In the next 24 hours, with some agitating, it flowed 5,200 bbls. Viola lime was found at 4,061 feet, dolomite at 4,112 feet, first oil at 4,184 feet, and the hole was drilled to a total depth of 4,190 feet. In the same section, Mae Bris Oil Co.'s No. 2, C NW SW NW Section 33-7-4, had 2,000 feet of oil in the hole from dolomite at 4,162-99 feet. It had not been acidized.

The Phillips Petroleum Co.'s No. 5 Alexander, C SW SE SE Section 25-15-7, a few miles south and a little west of Depew, Creek County, made a 417-bbl. initial production from the Wilcox sand at 3,796-3,806 feet.

The third well in the Crescent Pool, Continental Oil Co.'s No. 1 McConnell, is Section 28-17-4w, came in during the past week. It is variously estimated from 5,000 bbls. upwards, but had only cleaned itself and was shut in. It is located midway between the two other wells that have shown big production. Each of the three wells is located in the center of 40 acres.

September Pipe Line Runs

The proration division of the Oklahoma Corporation Commission reports that the pipe line runs from leases in Oklahoma in September averaged 546,368 bbls. per day, including 211,239 bbls. per day from Oklahoma City, 133,497 bbls. from Greater Seminole, 20,832 bbls. from Class C pools, 806 bbls. from three wildcat pools, County Line, Crescent and Orlando, and 179,994 bbls. from unprorated areas. The total production averaged 7,962 bbls. under the allowable.

Production by Pools

Estimated daily average production in Oklahoma in the week ending October 28 and in the preceding week follows:

	Oct. 28	Oct. 21
Allen	8,860	9,590
Bowlegs	9,250	11,010
Bristow-Slick	11,150	11,100
Healdton	9,950	9,900
Hewitt	5,150	5,100
Burbank	9,300	9,300
Lucien	5,350	7,550
Carr City	5,785	6,150
Cromwell	4,900	4,900
Earlsboro	9,090	9,300
East Earlsboro	14,120	14,160
South Earlsboro	1,150	1,100
Little River	13,765	15,170
East Little River	900	900
Oklahoma City	171,065	211,520
Seminole City	8,889	9,185
East Seminole	1,450	1,195
Searight	2,035	2,295
Maud	1,375	1,650
Mission	5,040	4,720
Cushing-Shamrock	13,400	13,300
St. Louis-Pearson	18,240	19,720
Tatums-Tussey	7,850	7,850
Sholem Alechem	5,200	5,200
Other pools	127,785	127,925
Total Oklahoma	471,070	519,820

Last week's production of 471,070 bbls. per day was 48,750 bbls. below that of the previous week, and 23,930 bbls. under the average daily allotment fixed by the Federal oil administration.

The average for the 14 days was 495,445 bbls. per day, or only 445 bbls. per day over the allowable.

Proration Department's New Policy

A new policy was adopted by the state proration office of the Oklahoma Corporation Commission in the past week relating to the completion and testing of wildcat wells, or wells in newly opened fields. Formerly it has been the practice to drill the well in, and to add the oil to that produced under the regular test and to charge the total against the well as production to be considered as overage, and the well to be shut in for a period long enough to make up this amount at the rate of 50 bbls. daily. If a well made 5,000 bbls. during the drilling in and test period it was shut in for 100 days.

This order had a tendency to make many operators clean their well as quickly as possible, an admittedly bad practice, for it is known that later production may be seriously impaired by improper cleanout of the mud when the well is completed. Furthermore true capacity of the well cannot be secured under the partial production policy and this has led to many misleading "potentials" in the past.

To correct this evil it is now proposed to have operators about to bring in new wells, report to the umpire's office 24 hours or more in advance of the time drilling in is to be started, and they will then be given instructions as to methods to be followed, after discussion of the situation with the superintendent in charge. Proration office officials know enough about actual field conditions to make close estimates of actual conditions in the well and to decide upon the best course recommended by the operator in charge at the well, and by having him make periodical reports to the umpire's office while the work is being carried on it is possible to complete the well in the best approved manner and insure securing a well of full capacity.

Testing a well for a few hours, such as has been the case in many fields under proration orders, has proven very misleading and has been the cause of building up many wrong potentials and misleading the industry as to oil actually available for production from new fields. With the wildcat well actually tested for 24 hours, more or less as the conditions at the particular well require, a true criterion of this well's capacity to produce will be secured. This will be of benefit to everyone concerned and will assist materially in allocating future allowables to the new fields. The excess oil produced under this new plan of completion will be absorbed as much as possible in the total allowable to the State. The difference between Federal allowable for the State and the daily production has been found to vary to such an extent as to permit the proration office to have some leeway in this matter and the officials propose to use these variables to the best advantage.

Wildcat Operations in Oklahoma

Week Ending October 28

Northern Oklahoma

ALFALFA COUNTY

Company, farm and location—	Remarks.
Acre et al's No. 1 Acre, C SW NE Sec. 14-24-11w	C.O.; T.D. 6,196 ft.

BECKHAM COUNTY

Mid-Texas' No. 1 Sidell, SE SW SW Sec. 17-9-22w	Drlg. out cmt.; T.D. 2,780 ft.
Pattee Royalty Co.'s No. 1 Goose Tree, SW SE SW SE Sec. 11-10-23w	T.D. 3,965 ft.

COAL COUNTY

Funk & Russell's No. 1 Miller, SE NE Sec. 10-2-8	S.D. 2,750 ft.

GARFIELD COUNTY

J. H. Lewis' No. 1 Clark, C NW NW Sec. 34-21-4w	Drlg. 5,315 ft.

GREER COUNTY

Otis Cosgrove's No. 1 Border, C S½ NE NW Sec. 31-6-22w.	Drlg. 105 ft.

HUGHES COUNTY

Dixie-Lee Oil Co.'s No. 1 Taylor, C NW Sec. 32-5-10	S.D. 350 ft.
Scruggs et al's No. 1 Black, NE Sec. 13-9-10	Set pipe at 460 ft.; S.D.

KAY COUNTY

Morgan et al's No. 1 Bush, NW NE NE Sec. 35-28-4	S.D. 2,695 ft. for pipe.
Burton Lewright et al's No. 1 Leseman, SW NE SE Sec. 4-29-2	Rig

KIOWA COUNTY

Christian's No. 1 Jones, NE NW Sec. 5-7-18w	Drlg. on iron at 1,856 ft.

LINCOLN COUNTY

Amerada Pet. and Stanolind O. & G. Co.'s No. 1 Martinek, NW SE Sec. 35-13-5e	Drlg. 3,730 ft.
Amerada Pet. Co.'s No. 1 Long, C NW NW SW Sec. 12-13-6	Dry 4,277 ft.; will abnd.
Huckleberry et al's No. 1 Boland, SW cor. Sec. 25-12-3e.	Moving in.

MARSHALL COUNTY

Robb et al's No. 1 Vittitoe, NE SE Sec. 11-4s-4e	S.D. 2,315 ft. for fuel.

MURRAY COUNTY

A. B. Harden's No. 1 Sadler, NE Sec. 19-1-2	Rig.
T. E. Revells et al's No. 1 Wolfe, NE cor. Sec. 12-1-2	S.D. for pipe at 1,500 ft.

MUSKOGEE COUNTY

J. S. Routt et al's No. 1 Escoe, CWL SE NE Sec. 17-13-17	T.D. 1,200 ft.; S.D. for 10-in. csg.

OKLAHOMA COUNTY

Houston et al's No. 1 Ketcham, CSL NW NE SE Sec. 12-14-3w	Drlg. 6,827 ft.
Mid-Continental Oil Co.'s No. 1 Edwards, C SE SE Sec. 19-11-1	S.G. 3,160-80 ft.; S.D. 3,341 ft.
H. E. Rapp's No. 1 Price, CEL NE SW Sec. 19-14-3w	T.D. 6,708 ft.; acidized.
F. Russell's No. 1 Heapley, SW NW NE Sec. 32-13-3w	Wilcox sand 6,649-59 ft.; 347 bbls. in 24 hrs.; rigging up standard tools.

PAYNE COUNTY

O. N. Maines et al's No. 1 Scheldberg, NW SW NW Sec. 27-22-6	Wilcox sand 3,114-38 ft; wtr.; S.D.

PITTSBURG COUNTY

Haley et al's No. 1 Walkerson, NW cor. Sec. 9-2-16	Dry 435 ft.
Moffett & Hall's No. 1 Jones, C NE NW Sec. 14-8-14	Broken sand 3,100-3,290 ft.; S.D.

PONTOTOC COUNTY

Galbreath's No. 1 Stafford, NE SE SE Sec. 21-2-8	Drlg. 1,030 ft.
Choctaw O. & G. Co.'s No. 1 Thompson, SW NE SW Sec. 1-1-7	S.D. 1,630 ft.
W. E. McGraw's No. 1 Mayhue, NE Sec. 19-3-6	S.D. 1,300 ft.
McGee et al's No. 1 Newborn, SW NE Sec. 31-5-4	Rig.
Williams' No. 1 Kroth, NE SE Sec. 32-2-4	H.F.W. 1,977 ft.
Wirrick's No. 1 fee, SE SW Sec. 29-2-7	Acidized; flowed 550 bbls. in 24 hrs.; S.D. for tankage.

POTTAWATOMIE COUNTY

Atlantic Oil Prod. Co.'s No. 1 School land, C NE NW NW Sec. 36-10-4	Drlg. 2,430 ft.
Conley Drlg. Co.'s No. 1 Vinson, NE cor. Sec. 13-7-4e	S.D. 3,794 ft.
Pegue Drlg. Co.'s No. 1 Lovelace, NW SW NW Sec. 27-6-4	T.D. 2,780 ft.; csg. collapsed.
Vivian Oil Co.'s No. 1 Kanster, SE SW Sec. 18-7-4	Set 6-in. pipe 3,926 ft; W.O.C.S.

SEMINOLE COUNTY

Huffman Drlg. Co.'s No. 1 Scott, NW cor. SE	Abd.
Stewart & Egan's No. 1 Sanderson, NE SW Sec. 27-6-5	H.F.W. 3,740 ft.; P.B. to 3,724 ft.

WASHITA COUNTY

McWhirter & Bost's No. 1 Hall, SW SE SE Sec. 23-8-19w	Drlg. 180 ft.

Southern Oklahoma

ATOKA COUNTY

J. D. Boukan's No. 1 Howard, NW SW NW Sec. 20-2s-10e	S.D. for pipe 682 ft.
Blake's No. 1 Galbreath, SW NE SE Sec. 5-1-15	S.D. 243 ft.
Malernee et al's No. 1 Cole, NE NW Sec. 19-2s-14	S.D. 638 ft.

JEFFERSON COUNTY

Wakefield's No. 1 Kelly, NW SE Sec. 1-5s-5w	Drlg. 550 ft.

STEPHENS COUNTY

J. W. Madison's No. 1 Tussey, SW SE NW Sec. 24-1n-4w.	Drlg. 1,900 ft.
Navajo Oil Co.'s No. 1 Miller, NW cor. NE Sec. 13-1n-4w.	Drlg. 2,230 ft.
R. T. Poland et al's No. 1 Green, C NE NW NW Sec. 3-1s-4w	Rig on ground.

TILLMAN COUNTY

J. H. Everett's No. 1 Crane, SW cor. Sec. 15-2s-14w	Rig.

MAJOR COUNTY

Paul R. Robb's No. 1 Vittitoe, C NE SE Sec. 11-5-4	S.D. 3,500 ft.

Big Well in Crescent Pool

Another big well made the report from the Crescent Pool in Logan County interesting. It was to be expected that the Continental Oil Co.'s No. 1 McConnel, C SE SE Section 28-17-4w, would be a good well, as it is located between two big producers, north and south of it. The top of the Wilcox sand was found at 6,118 feet. Pay was found at 6,146 feet and it was drilled in 4 feet. The well cleaned itself while being bailed in and was then shut in for tankage. It is estimated to be good for 5,000 bbls. a day.

The Gypsy Oil Co. and Carter Oil Co.'s No. 1 Walker, C NE NE Section 33-17-4w, just south of the Continental well, was tested out in the past week. It flowed 2,900 bbls. in 24 hours; then 2,471 bbls. It was again shut in. The bottom hole pressure was found to be 2,880 pounds and the casinghead pressure 2,250 pounds maximum.

The Sinclair Prairie Oil Co. which had a crooked hole in its No. 1 Short, SW NE Section 27-17-4w, started drilling a new hole at 6,219 feet. The drill pipe stuck. It was backed off at 5,480 feet and the hole plugged back to 5,011 feet, and a new hole will be started from that depth.

The Sinclair Prairie Oil Co.'s No. 1 Phillips, NE NW Section 28-17-4w, found Mississippi lime at 6,075 feet and was drilling at 6,145 feet. The three productive wells in the field had no Mississippi lime.

The Mid-Continent Petroleum Corp. is building rig for No. 1 Campbell, C SE NE Section 33-17-4w, and the Texas Co. is rigging up rotary for No. 1 Denny, C NE SE Section 33-17-4w. Gypsy Oil Co. was drilling at 5,720 feet in No. 1 Good, C SW NW Section 27-17-4w, and should be the next well completed.

Noble County

In the Lucien Pool in southwestern Noble County, the Stanolind Oil & Gas Co. and Continental Oil Co.'s No. 1 Boley, C SW NW Section 16-20-2w, which was a failure in the deep horizons, and which was plugged back to 4,798 feet, in Oswego lime, was tubed and given a test and it flowed 85 bbls. in 24 hours. The well had previously swabbed and flowed as much as 280 bbls. in 24 hours from the same horizon.

Lucien Consolidated Oil Corp.'s No. 1

J. Boley-A, C NE NE Section 18-20-2w, after the tools had been recovered from the hole, was given another production test and made 924 bbls. in 24 hours. The total depth is 5,214 feet.

Texas Co. had to abandon No. 1 Maxwell, C E half NE NW Section 18-20-2w. A drill collar was lost in the hole and it was impossible to recover it. The hole was at a total depth of 5,411 feet. It was very low on structure.

Lucien Consolidated's No. 1 Webber, C NW NW Section 20-20-2w, had Simpson dense at 5,025 feet; top of the first Wilcox at 5,045 feet, with a showing of oil. Eight and five-eighths inch casing was cemented at 5,039 feet, and the crew was waiting for it to set.

The Stanolind-Amerada No. 1 Kolb, C NW NE Section 33-20-2w, bottom hole water was being plugged off. This well had been shot at 5,093-5,105 feet and had flowed 114 bbls. along with 1,000,000 feet of gas.

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. have made a location for No. 1 Schoenwald, C SE SE Section 20-20-2w, and Shell Petroleum Corp. has cellar dug for No. 1 Hay, C SW SW Section 21-20-2w.

Greater Seminole District

Mid-Continent Petroleum Corp. acidized No. 2 Vieux, SE SW SE Section 31-7-5, and it swabbed 715 bbls. of oil and 700 bbls. of water in 24 hours from 4,060-70 feet and 4,090-95 feet.

Gypsy Oil Co. and others completed No. 2 Tenwas, SW NW Section 25-6-4, Asher district, Pottawatomie County, reported last week as flowing 1,869 bbls. initially from Simpson dolomite at 3,384-3,440 feet.

Amerada Petroleum Corp.'s No. 1 Smith, NE NW Section 6-6-5, got dolomite at 4,060 feet, oil at 4,082 feet and drilled to 4,104 feet. It swabbed 511 bbls. in 12 hours and was then acidized.

The following new work was reported from the Greater Seminole area in the past week: Inglehart and others' No. 1-A Harjo, SW NE NW Section 20-9-6, rig on ground; Stauffer Drilling Co.'s No. 1 J. F. Bray, SE cor. Section 31-8-4, location; E. Haer's No. 2 fee, SE NE SW Section 31-10-5, cellar; Stauffer Drilling Co.'s No. 1 W. F. Bray, NW cor. Section 5-7-4, cellar; Hart and others' No. 1 Deathridge, SE NE SE Section 20-7-4, rig on the ground; Amerada Petroleum Corp.'s No. 2 Terry, SE NE SE Section 32-7-4, rig; Amerada Petroleum Corp.'s No. 4 Harrison, SW NW SW Section 33-7-4, rig; same company's No. 5 Harrison, NW SW SW Section 33, a location; Hall & Briscoe's No. 3 Brown, SE SW NW Section 33-7-4, drilling at 1,405 feet, and No. 4 Brown, NE SW NW Section 33, rigged up; Turman Oil Co. and others' No. 2 Ward, SW SE NW Section 33-7-4, rigging up; Vaughn and others' No. 2 Lowther, NE SW Section 33-7-4, location; Carter Oil Co.'s No. 2 Monnett, SW SE SW Section 33-7-4, material on ground; Phillips Petroleum Co.'s No. 2 Richards, SW SE Section 35-7-4, rig; Mid-Continent Petroleum Corp.'s No. 1 Kohlchot, SW SE SE Section 36-7-4, location; Mid-Continent Petroleum Corp.'s No. 3 Bruner, NE SW SE Section 9-7-8, rigging up; Manahan's No. 3 Chapman, CEL W half SE SW Section 10-7-8, drilling at 700 feet; Mid-Continent Petroleum Corp.'s No. 5 Factor, SW NW SE Section 15-7-8, machine; Burke Greis Oil Co.'s No. 2 Davis, C SE SW SE SW Section 20-7-8, drilling at 1,290 feet; Mainard and others' No. 5 Moore, NW NE Section 22-7-8, machine; Winona Oil Co. and Jarvis & Holm's No. 1 Harjo, NW NE NW Section 29-7-8, rigging up; Redwine and others' No. 1 Williams, 495 feet north and east of SW cor. Section 22-7-8, rigging up; Vivian Oil Co.'s No. 2 Lucas, NE NW NW Section 2-6-4; Superior Oil Co. and others' No. 1 Love, NW cor. Section 4-6-4, cellar.

Okmulgee-Muskogee

Rose and others are rigging up No. 3 Jefferson, NW cor. Section 33-15-15, Muskogee County, and Godfrey and others have a machine in for No. 1-A Herrod, CSL NW NW Section 24-15-17.

Foltz and others' No. 4 Bema, SW NW NW SE Section 8-15-18, was dry and abandoned at 1,661 feet. It had Wilcox sand at 1,630-60 feet.

In Okmulgee County, Colton & Phillips Petroleum Co.'s No. 1-A Ragsdale, C SW NW SE Section 30-14-12, made 115 bbls. in 24 hours, following a shot in Wilcox sand at 2,817-24 feet. Same operators have started drilling No. 1-A Walsh, SE SW Section 29-14-12.

W. J. Metzger's No. 2 McDaniel, NW NE SE Section 6-14-19, Muskogee County, is a 15-bbl. well at 813-20 feet, after a shot.

Gled Oil Co. has spudded No. 18 Fox, NE cor. SW Section 22-13-14, Okmulgee County.

Good Gasser in Beckham County

Fred Coogan has a 23,000,000-foot gas well in No. 1 Beagle, C NE NW Section 28-9-23w, Beckham County, from dolomite at 2,585-2,714 feet. It is shut in.

Lincoln County

The Amerada Petroleum Corp. will abandon No. 1 Long, a Lincoln County wildcat which was closely watched since it started drilling. It is in C NW NW SW Section 12-13-6. It was a hole full of water in Wilcox sand at 4,265-77 feet and was plugged back to Hunton lime at 4,093-4,125 feet and shot with 30 quarts. It was barren.

In Lincoln County, Stanolind Oil & Gas Co. and others are building rig for No. 1 Simpson, NE NW Section 11-14-3. Slick and others are building rig for No. 5 fee, NW NE SW Section 7-14-4. Kemp & Nunally were drilling at 320 feet in No. 1 Lingren, NW SW Section 25-17-6.

Pawnee and Creek Counties

Tuttle Oil & Gas Co. is drilling at 560 feet on No. 1 Walkup, CEL SW SW NW Section 36-20-7e, in the Jennings district, Pawnee County.

Samples & Mann have a failure in No. 1-A Crosslin, NE SW NE Section 3-19-8, Mannford district, Creek County. It was a hole full of water at 3,264 feet. Wilcox sand was found at 3,045-57 feet.

Johnson Oil & Refining Co.'s No. 2 Carolina, 760 feet north and 52 feet east of C Section 1-19-9, Mannford district, was shot with 330 quarts in Red Fork sand at 1,942-2,016 feet. It swabbed 90 bbls. in 24 hours.

National Refining Co.'s No. 11 Oglesby, 500 feet north and 550 feet east of C Section 1-19-9, was given a 155-quart shot in Red Fork sand at 1,961-95 feet, and it flowed 122 bbls. in 24 hours.

Gibson and others' No. 2 Jackson, NE NW Section 3-18-8, swabbed 40 bbls. initially from Red Fork sand at 2,601-34 feet.

J. E. Crosbie, Inc.'s No. 7 Escoe, CNL NW SW Section 26-18-8, found Layton sand at 1,284-1,326 feet. It was shot, but showed only 15 bbls. in the first day.

Doss and others' No. 2 Tiger, SW NW NE Section 34-18-8, made 75 bbls. initially after a shot in Layton sand at 1,275-1,303 feet.

F. O. Akin completed No. 1 Harry, NW SE SW Section 35-18-8. It swabbed 90 bbls. in 24 hours. The Layton at 1,244-68 feet was broken and dry but oil sand at 1,557-82 feet was shot with 120 quarts.

Henry and others' No. 1 Taylor, NW SW Section 2-17-8, made a 25-bbl. showing after a shot at 1,304-26 feet.

New work started in Creek County includes National Refining Co.'s No. 12 Oglesby, NW SW SW NE Section 1-19-9, rig on the ground; Johnson Oil & Refining Co.'s No. 3 Prince, NE NW NE Section 3-18-8, machine; F. O. Akin's No. 3 Howard, SW NW SE Section 34-18-8, drilling at 245 feet; and No. 4 Howard, SE SW NE Section 34, a machine; Doss and others' No. 3 Tiger, CEL NW NE Section 34-18-8 (corrected location), machine; P. C. Perry and others' No. 1 Montgall, SE NE NW Section 34-18-8, rigged up; C. W. Titus' No. 1-A Tiger, NW SE SE Section 3-17-8, rigged up; Henry and others' No. 1-A Watson, NW cor. Section 11-17-8, drilling at 280 feet; E. A. Smith and others' No. 4 Freeman, SE NE SW Section 14-17-8, spudded; Curtis Oil Co.'s No. 1 Unallotted, SE SW NE Section 4-17-10, spudded; Sherry & Murta's No. 4 G. Cruel, C NW SW NE Section 36-17-11, spudded.

Oklahoma County

H. E. Rapp is trying the acid treatment on his wildcat test in the Edmund district in Oklahoma County. The well is No. 1 Price, C E half NE SW Section 19-14-3w. It had flowed 47 bbls. of oil in 2 hours and 45 minutes through tubing. The kickoff collars were removed and oil circulated to clean the hole. Then 1,500 gallons of acid was pumped into the bottom and the well shut down. Top of the Wilcox sand is at 6,684 feet, total depth at 6,708 feet. In the same district, W. E. Huston and others were testing with Halliburton tester in No. 1 Ketchum, in Section 32-14-3w, which was plugged back to 6,748 feet, after drilling to a total depth of 6,853 feet, with no results in oil.

Frank Russell, Inc.'s No. 1 Highley, in Oklahoma City, SW NW SE Section 23-12-3w, averaged 394 bbls. per day production from September 28 to October 24. The crew was rigging up standard tools to deepen. It produces from sand at 6,649-59 feet.

Wells which have already been reported in, but which were tested again in the past week, included Pierce and others' No. 1 Shepard, in Section 15-11-3w, flowed 1,187 bbls. in five hours; Murray & Stephens' No. 1 Anderson, Section 15-11-3w, flowed 1,823 bbls. in four hours, with gas at the rate of 39,800,000 feet; Beverly Hills Oil & Gas Co.'s No. 1 Chester Davis, Section 27-11-3w, flowed 1,011 bbls. in four hours, with gas at the rate of 4,000,000 feet; Indian Territory Illuminating Oil Co.'s No. 5 Little, Section 27-11-3w, flowed 1,626 bbls. of oil in four hours, with gas at the rate of 25,000,000 feet.

Indian Territory Illuminating Oil Co.'s No. 3 Wickline, NW SW NW Section 26-11-3w, got the top of the Wilcox sand at 6,505 feet, total depth 6,613 feet. The well flowed 707 bbls. in one hour, with gas at the rate of 25,000,000 feet. It was shut in.

Shields Petroleum Co. has rig up for No. 1 Thomas, SE SW Section 22-11-3w. Indian Territory Illuminating Oil Co. has rig up for No. 2 Jarvis, CWL NW SE NW Section 26-11-3w. Transit Oil Co. has rig for No. 1-A Surback, 1,145 feet south, and 50 feet west of C Section 22-11-3w. Stahl and others have started drilling No. 1 Odelbache, 75 feet from north line and 510 feet from west line, NE Section 27-11-3w.

Marshall County

Centrop Petroleum Co. is drilling at 458 feet in No. 1 Ayers-B, SE SW SE NE Section 25-7s-5, Marshall County.

McCrory and others completed No. 2 Little, NW SW Section 30-7s-6, a 7-bbl. well, at 504-18 feet.

F. W. Merrick, Inc., was drilling at 573 feet in No. 9 Davidson-Sullivan, CEL SE NW NW Section 30-5s-6.

Carter County

The Carter Oil Co. abandoned its No. 1 J. A. Nicholson, C SW NE SW Section 3-1s-3w, Tussey area, Carter County. It produced a small quantity of heavy oil at a total depth of 2,708 feet.

W. H. Smith abandoned a location for No. 1 McCrory, SW NE NE Section 10-1s-3w, after the Carter Oil Co.'s No. 1 Gideon Gray, close by, was abandoned as dry.

Foster Oil Co.'s No. 1 Carter, C NW NW SW Section 13-1s-3w, swabbed 140 bbls. in 12 hours from a sand series from 2,389-2,500 feet. It was showing a little water, and was to be recemented.

The Owl Oil Co.'s No. 16 Wilson, SW SE SW Section 4-3s-5w, Stephens County, was shot with 40 quarts in broken sand at 1,070-1,160 feet, and made an 8-bbl. showing.

Shasta Oil Co. was building rig for No. 3 Whitehead, CSL SW NW NE Section 1-2s-10w, Cotton County. George Pace and others were drilling No. 2-A Duncan, NW SW NW NE Section 28-2s-7w, Stephens County, at 20 feet. R. T. Poland was building rig for No. 1 Green, C NE NW NW Section 8-1s-4w, Stephens County.

Osage County

Lewis Production Co.'s No. 1, SE NW Section 21-24-7, Fairfax area, Osage County, was drilled deeper to 2,668 feet and flowed 415 bbls. naturally in 24 hours, and then 437 bbls. on a later 24-hour test. Bartlesville sand was topped at 2,635 feet and the well had flowed 505 bbls. at a total depth of 2,663 feet, but on a later test made 167 bbls. in 24 hours at the same total depth.

Gypsy Oil Co.'s No. 1, SW cor. Section 18-24-8, which had showings of oil and gas in Burgess sand at 2,483-91½ feet and a gas showing in chat at 2,514-22 feet, was drilled into Siliceous lime at 2,842-46 feet and was abandoned as dry.

The Gypsy Oil Co. and Continental Oil Co.'s No. 1, NE cor. Section 14-23-7, found only 1 foot of pay in Hominy sand at 2,832-89 feet. The well made 42 bbls. the first 24 hours and 75 bbls. the second. Acid did not help it, and on the last test it swabbed 30 bbls. in one day.

New work in Osage County includes Sinclair Prairie Oil Co. and Meade Oil Co.'s No. 1, NE SW Section 10-25-6, rigging up; J. E. Morrison's No. 1, SE cor. Section 35-25-11, drilling at 940 feet; Producers & Refiners Corp.'s No. 2, NW SW NW Section 15-24-7, drilling at 365 feet; Continental Oil Co.'s No. 3, NW SE Section 21-24-7, rigging up; Continental Oil Co. and Gypsy Oil Co.'s No. 2, SW NE Section 21-24-7, building rig; Lewis Production Co.'s No. 2-B, NE SW Section 21-24-7, spudded; F. M. Penney's No. 4, SW SE Section 15-24-8, location; Peters Petroleum Corp. and Producers & Refiners Corp.'s No. 1, SE NE NW Section 19-24-8, drilling at 400 feet; Sinclair Prairie Oil Co. and Mead Oil Co.'s No. 2, SW NW NE Section 22-24-8, moving in tools; H. H. Markey's No. 14, SE NE SW SE Section 25-23-7e, drilling at 400 feet; Norbla Oil Co.'s No. 1-A, SW NW Section 28-23-9, location; Clint Moore Estate's No. 2, C N half NE NW Section 34-21-9, rigging up.

Tulsa and Wagoner Counties

L. R. Ash and others have a good shallow sand producer in No. 1 Childers, C NW SE Section 15-18-17, north of Wagoner, in Wagoner County. Sand was found at 832-36 feet and the well flowed 130 bbls. naturally in 24 hours.

McIntire and others' No. 5 Tiger, C S half NE NW Section 2-17-15, Coweta area, was shot in sand at 1,072-1,101 feet and made 75 bbls. initial production.

Thomas and others got a 75-bbl. well out of their No. 1 Davis, NW cor. SW Section 22-17-16, from sand at 940-50 feet, shot with 35 quarts.

Knox & Shouse's No. 1 J. Berryhill, C NW SW Section 11-17-15, was dry and abandoned at 1,160 feet.

Sands Petroleum Co. has machine in for No. 4 Robin, SW cor. Section 23-18-15, and Helvie & Stout were drilling at 900 feet in C NW SE Section 24-18-15. J. E. Martin has started drilling No. 5 Kelly, SW SE NW Section 35-18-15. Scales & Boley's No. 1-A Vann, NE NW NW Section 1-17-15, was spudded; Cahill and others were drilling at 300 feet in No. 3 E. Tiger, C SE NW Section 2-17-15.

ANOTHER LINE FROM LUCIEN

The Stanolind Pipe Line Co. will lay a 42-mile 8-inch pipe line from the Lucien Field in Noble County to its main line at Drumright in Creek County. Old pipe will be used. A crew of 50 men is now busy at Tonkawa reconditioning the first batch of pipe, about 4 miles of it, taken up in various old fields, where more than one line had once been necessary to meet the company's requirements. The contract for laying the line has been awarded to Williams Brothers of Tulsa.

WILLIAM H. ABBOTT DEAD

William H. Abbott, 58, for many years vice president of the Wheeling Steel Corp., died Wednesday, October 25, in the Ohio Valley General Hospital, Wheeling, W. Va.

Northwest Extension or a New Field at Tomball; Greta Operators to Control Development

By W. A. SPINNEY
Gulf Coast Bureau, The Oil and Gas Journal

HOUSTON, Tex., Oct. 30.—The definite establishment of a 7,500-foot northwest extension of the Tomball Field or the opening of an entirely new producing area was given by the completion of Stanolind Oil & Gas Co.'s No. 1 Theis, in J. H. Edwards Survey, which came in flowing 18½ bbls. of fluid of which 6 per cent was basic sediment from sand at 5,541-49 feet. The full importance of this well has not been fully determined due to the shoving of basic sediment and the well producing from 8 feet of sand.

The well is in the extreme southeast part of Montgomery County just across the line from Harris County. The possibility that this may be a separate field was indicated by the fact that Humble Oil & Refining Co.'s No. 1-B Kobs, in J. H. Edwards Survey, and 1,000 feet northwest of the main field and between the field and the Stanolind well, was abandoned after finding salt water in the sand at a total depth of 5,609 feet.

Interest in the main part of the field centers in the Magnolia Petroleum Co.'s No. 1 Ervine, which was coring sand at 5,480 feet. This test is about a half mile north of Continental Oil Co.'s No. 1 Petrick, the most northerly well and the largest oil producer in the Tomball Field to date.

Greta Field

The Greta Field in Refugio County had an interesting week. Operators at a meeting held in Refugio agreed that development in the deep sand found in one well on the east side of the field would be limited to one well on 40 or 50 acres and the production from that well would be 5.8 bbls. per acre. They agreed that if one operator had a 25-acre lease that he would pool this acreage with some of the adjoining leases and share proportionally in the production. This plan was also approved by the royalty owners.

From present indications the west edge of production has been reached. Also the second well that is to test the 5,900-foot sand on the east side of the field is drilling about 50 feet below where the discovery offset well found its oil pay. However, this second test may be off vertical and until later reports are received it cannot be definitely known whether it missed the 5,900-foot pay sand or will be obliged to drill deeper. The offset discovery well found the pay at 5,919 feet and the other test was 5,902 feet on the last reports, where it was fishing for drill pipe.

Wells on the west side of the field that are indicating the western edge include Atlantic Oil Producing Co.'s No. 2-C O'Brien, now shut down at a total depth of 4,412 feet without finding any sand. This test was believed to be running low on some of the upper formations and was estimated to be from 30 to 50 feet lower than other producers on the same lease. Alamo-Atlantic Oil Producing Co.'s No. 5-E O'Brien, also on the western edge of production, was drilled to a total depth of 4,407 feet and made 84 bbls. of oil through a one-quarter inch choke in seven hours. Atlantic Oil Producing Co.'s No. 3-C O'Brien was drilled to a total depth of 4,399 feet, and found only 9½ feet of sand.

Humble Oil & Refining Co.'s No. 1 F. Heard, in the M. J. Ximenes Survey, started blowing wild about the middle of last week and cratered. Everything was lost in the crater when the well started making large quantities of gas. The test was drilled to a total depth of 2,910 feet and in coming out of the hole the gas found at 2,100 feet and at 2,500 feet blew wild. The only casing that was in the hole was 10¾-inch at 1,414 feet. This is the third blowout in the Greta Field since it was discovered last May. This latest blowout is in a new area on the southeast side of the field approximately 2,000 feet south of production and is about a mile south of the other two wells that blew out.

United Production Co.'s No. 8 Fox, in William Hews Survey, is the most southeasterly well in the field. It was drilled to a total depth of 4,403 feet finding the top of the Greta sand at 4,-399 feet. The well flowed in the slush pits at the rate of 25 bbls. an hour for two hours and then went dead. No production test has been made of this oil showing and it will probably be put on the gas lift. This well extends production 2,000 feet southeast. Same company's No. 6 Fox, about 2,500 feet north of No. 8 Fox, resumed flowing after being put on the gas lift making 234 bbls. of oil in 24 hours. It was first put on the gas lift making 100 bbls. of oil from a total depth of 4,390 feet.

Iowa Field

Recent developments in the Iowa Field along the boundary lines of Jefferson Davis and Calcasieu Parishes, Louisiana, indicate there is a lot of proved territory yet to be developed on the dome. The recent completion of Shell Petroleum Corp.'s No. 6 Heyd, extended production a mile west, the only well drilled in this direction. Same company's No. 5 Heyd made 22 bbls. of oil an hour and 680,000 feet of gas a day through a twenty-two-sixty-fourths inch choke from a total depth of 6,855 feet. Same company's No. 2 Stafford, was completed for 1,137 bbls. of oil through a twenty-sixty-fourths inch choke from a total depth of 6,696 feet. Both wells are in the main part of the field. Barnsdall Oil Co.'s No. 1 Fontenet, on the east side, was drilling in shale at 6,755 feet. This test, if it makes a producer, will extend the field a half mile east.

LaFourche Parish

Gulf Refining Co.'s No. 1 B. Community, Leesville, La Fourche Parish, Louisiana, substantially extended production northeast when it flowed 450 bbls. of pipe line oil in nine hours through a half-inch choke. This well proved up considerable territory on the dome. It is more than 3,100 feet northeast of the Texas Co.'s discovery well. Except for one well to the west, all development previously has been to the southeast.

Livingston Field

The Livingston Field in Polk County was given added importance by Humble Oil & Refining Co.'s No. 1 Grandbury, which extended production a quarter of a mile west. It made 530 bbls. of fluid the first 13 hours through a half-inch choke. The same company immediately started operations for its Nos. 2 and 3 Grandbury. These tests are expected to help prove whether production can be obtained on the Humble's 10,000-acre block, on the west side of the present Livingston Field.

Skelly Oil Co.'s No. 1 Sanders, which also extended production at the time it was completed to the southwest, is being reworked. It flowed 65 bbls. of oil through tubing and through fourteen-sixty-fourths inch choke from a total depth of 4,322 feet. Skelly also is preparing to start operations at its No. 2 Sanders, south and east of No. 1 Sanders.

Dick Schwab's No. 1 Kirby & West, wildcat in the Geraldus Thomas Survey, 9 miles southeast of the Livingston Field, which was showing for a high pressure gas well from 4,711-71 feet, and was plugged back and sidetracked when a core barrel and drill pipe were lost in the hole, was drilling at 4,824 feet in a new hole with nothing showing. What this test may develop with deeper drilling will be watched with interest. It has resulted in a number of lease purchases in the vicinity at substantial prices.

Genoa Prospect

Jack Schultz and others' No. 1 Syndicate Land Co., on the Genoa prospect in Harris County, was expected to reach the sand the first part of the week. It was drilling at 3,100 feet on the last reports. The test is about a half mile north of the company's recently completed gas well drilled on the same prospect.

Fort Bend County

Quintana Oil Co. and others' No. 1 Great Southern Life Insurance Co., Ed Robertson Survey, wildcat test at Pilant Lake, in Fort Bend County, was preparing to make a drill stem test of an oil showing found at 6,320 feet. This is one of several tests drilled on this prospect and if it makes a commercial producer will open a new field.

Wharton County

Operations at Louis, Wharton County, were stimulated by finding a showing of oil in a new sand for the area. The test was Pure Oil Co.'s No. 1 W. McIntyre, about 660 feet southeast of the company's No. 1 Stewart, which showed oil on a drill stem test from 5,-963-71 feet. No. 1 McIntyre found sand from 5,153-60 feet, and on a drill stem test showed 20 fourbles of oil and 2 fourbles of salt water after being open 20 minutes through three-eighths inch chokes on top and bottom. The test was drilling deeper on the last report in water sand at 5,382 feet.

No. 1 Stewart, which was drilled to a total depth of 8,067 feet and plugged back and sidetracked at 5,404 feet, is fishing at 5,464 feet. Pure Oil Co. has shut down temporarily two of its operations at Louise to wait developments at the other six tests. Pure Oil Co.'s No. 1 Garrett, Section 28, is standing at a total depth of 6,343 feet, with nothing showing; No. 1 Kuntze is still fishing at 7,134 feet; No. 1 Lancaster is drilling at 5,879 feet; No. 1 W. Houston is drilling in shale at 5,892 feet; No. 1 L. Weaver is standing at a total depth of 6,181 feet, with nothing showing; No. 1 Wilder is drilling at 6,590 feet; No. 1 Hudgins is standing at a total depth of 6,196 feet, with nothing showing.

Coleta Creek

Interest again turned to the Coleta Creek area in Victoria County, when J. F. Camp's No. 1 Maurer showed gas of 250 pounds pressure in five minutes on a drill stem test during the week. The drill stem test was made from 2,165-87 feet. A second drill stem test was made and a pressure of 375 pounds was registered in three minutes from sand at 2,-164-80 feet. Another drill stem test was made of the sand from 2,189-95 feet and it registered 20 fourbles of salt water. Cores of the sand also showed an oil saturation and other owners decided to drill the test deeper in search of lower pay sands. The log of Stoneleigh Oil & Gas Co.'s No. 1 Zimmer, shows the same sand was logged at 2,202 feet and was 50 feet in thickness. This is a good indication that No. 1 Maurer is running higher on structure than No. 1 Zimmer. Owners of the Maurer test expect to drill the test to the sand found at approximately 2,846 feet and then make another drill stem test.

Stoneleigh Oil & Gas Co.'s No. 1 Zimmer found a sand at 3,910-13 feet and an attempt was made to take a drill stem test of this sand but it failed. Another sand was found at 3,960 feet and two attempts were made to take a drill stem test of this sand but both failed because of the lack of a seat. The test was drilling at 3,985 feet on the last reports.

In the same field, Cox & Calverts and others' No. 1 Dietzel, about three-quarters of a mile southeast, was expecting to start drilling operations early in the week.

Refugio Wildcats

Wildcat interest in Refugio County in the Bonnie View area received a setback when Texas Co.'s wildcat on the Rooke tract, J. M. Aldrette Survey, apparently missed the expected Refugio sand and was drilling deeper at 4,865 feet. There are two other wildcat tests starting in

(Continued on Page 78)

Gulf Coast Fields and Wildcats

Week Ending October 28

DAMON MOUND—BRAZORIA COUNTY

Company, farm and location—	Remarks:
Intercoastal Oil Co.'s No. 11 Wisdom, 350 ft. E of No. 6, Blk. 51, Lot D, A. Durst Sur.	T.D. 3,180 ft.; D.S. stuck at 2,-127 ft.; P.B. to sidetrack.

STRATTON RIDGE—BRAZORIA COUNTY

Amerada Pet. Corp.'s No. 3 Seaborn (W.O.), Austin & Williams Sur., 1,250 ft. E of W line, 4,550 ft. S of N line	T.D. 5,680 ft. in salt; P.B. to 4,-350 ft.; sidetracked to 4,500 ft.; tested S.W.; abd.

MANVEL—BRAZORIA COUNTY

Texas Co.'s No. 3-B Belcher, 2,747 ft. NE, 1,478 ft. SE of W center of lease	Drlg. shale and lime 4,896 ft.
Texas Co.'s No. 5-A Belcher, S 40 deg. W 3,430 ft., S 43 deg. E 300 ft. from N cor. of "A" lease, H. N. Little Sur.	Drlg. sand 5,718 ft.
Texas Co.'s No. 6 Belcher, H. N. Little Sur., South 42° W 2,490 ft. and S 48° E 400 ft. from N cor. lease	T.D. 5,476 ft.; standing.
Texas Co.'s No. 7 Belcher, 1,430 ft. S 48° E, and 900 ft. W 42° E from NW cor. of W. T. Belcher "A" lease, H. N. Little Sur.	Derrick.
The Texas Co.'s No. 2 Davis, 300 ft. out of S cor. Lot 42, H. N. Little Sur.	T.D. 5,812 ft.; standing.

(Continued on Page 58)

Spring Ridge, La., Area Is Back in the Limelight; Mississippi Leading the Completion List

SHREVEPORT, La., Oct. 30.—The Spring Ridge area, 5½ miles southeast of the Pleasant Hill Field in Sabine Parish, came back into the limelight during the past week after a period of inactivity during the past 18 months. The new well, the fourth to be drilled in that immediate vicinity, is Foster and Woodley's No. 1 Stevens in Section 17-9-11. A drill stem test for six minutes from 3,145-60 feet developed an estimated 5,000,000 feet of gas with a heavy spray of oil. Six and five-eighths inch casing is being set at 3,140 feet and the well will be bailed in during the coming week. The oil as taken from the ditch tested 37 gravity, but will probably run to 39 gravity, the same as Langbridge Oil Co.'s well, one-half mile to the east and the original well drilled in that area. The latter test was completed in October, 1931, flowing by heads 30 bbls. daily from 3 feet of sand from 3,368-69 feet. The second test in that area was Frank Foster's No. 1 Stevens, Section 20-9-11, a 12,000,000-foot gasser from 3,358 feet. The pay from the first two wells came from the Washita and Fredricksburg sands, but the pay from the present test is thought to be coming from the Tokio, and the paleontological reports of the log checks the latest producer about 150 feet higher than the other wells. One dry hole was drilled in the district to the south of the producers which indicates a definite trend to the north and west for future operations.

There were 14 completions reported from the four states of Louisiana, Arkansas, Alabama and Mississippi consisting of four gas wells and 10 dry holes.

MISSISSIPPI

Mississippi led the completion list with three gas wells and one dry hole in the Jackson Field and three wildcats that were found to be dusters. In Covington County, Eastman and Gardiner's No. 1 Bank of Deming, Section 26-8-15, was dry and abandoned in hard sand at 8,002 feet. This is the deepest test yet drilled east of the Mississippi River in this division and probably the deepest well drilled in any of the four states. In the Jackson Field, Atkins and Hightower's No. 1 Woodland Hills, Section 26-6-1e, was a good gasser gauging 27,500,000 feet of dry gas from 2,485 feet. Hensley and Tanner's No. 1 Hudson, Section 11-5-1e, in the same county, made 36,000,000 feet of gas from 2,407 feet, and across the river in Rankin County, Muse and Muse's No. 1 Carlton, Section 13-5n-1e, had an estimated flow of 30,000,000 feet from 2,410 feet. The dry hole reported from the Jackson district was an edge well. The United Gas Public Service Co.'s No. 1-C McLaurin, Section 19-6-2e, was junked and abandoned at 2,750 feet in chalk rock. The log of this well showed the top of the black shale at 2,496 feet and the top of the chalk at 2,593 feet. The well was taken over by the Love Petroleum Co. when the chalk was contacted and finished by these operators. In Jones County, the Snow Black Petroleum Co.'s No. 1 Watson estate, Section 24-7-13, was junked and abandoned in sandy shale at 4,500 feet.

Two new locations were made in the Hinds area of the Jackson Field during the past week. B. B. Jones and others have derrick up on their No. 1 McRae, Section 24-7n-1w, and have staked location for their No. 1 J. A. Stone in Section 18-5n-3e. Other drilling operations in Mississippi follow: Hinds County, Lionel Petroleum Co.'s No. 1 J. L. Gaddis, Section 7-7-3w, shut down in soft sand at 1,909 feet. Love and Lancaster's No. 2 Elton Plantation, Section 9-4-1e, has spudded in to 5 feet and shut down at that depth. Operations were begun to hold the leases on which the well was located. Meredith Trading Co.'s No. 1 Nelson and others, Section 24-6-1e, began on October 22 and is drilling at 540 feet. In Lamar County, Lamar Oil Co.'s No. 1 Scott, Section 18-2n-14, is shut down for 5-inch casing at 3,010 feet, and in the same county, Charles W. Gorr and others' No. 1 Jordan, Section 1-2n-15w, is still a derrick. The Madison County test, H. A. Wilson's No. 1 Copex, Section 24-9-3e, is drilling at 1,730 feet, and Newton County has one active wildcat in Bob Dalton's No. 2 Majors, Section 25-6-11, drilling at 2,810 feet with the top of the chalk contacted at 2,740 feet. A Warren County test, the Orbit Drilling Co.'s No. 1 R. L. Parker, Section 14-14-1e, is drilling at 740 feet.

NORTH LOUISIANA

The North Louisiana district reported one of the dullest weeks in several months with only five completions, four of which were dry holes and one gas well. Only one of the dry holes was a rank wildcat, Natchitoches Oil Co.'s No. 1 Edenborn, Section 4-11-6w, a duster at 3,156 feet. The other dry holes were all from the Sabine Parish area. Baird and Reed's No. 1 Dew, Section 22-8-11, was abandoned at 2,580 feet; Lowery and Greene's No. 1 Adair, Section 19-8-11, at 2,500 feet, and Pugh-Hickman Drilling Co.'s No. 9 Stille, Section 16-7-11, was dry and abandoned at 2,765 feet. The lone gasser came from the proven area of the old Monroe Field in Ouachita Parish, Hope Oil Co.'s No. 1 Cole heirs, Section 36-20-3e, gauged 3,000,000 feet of dry gas with 842 pounds rock pressure from 2,141 feet.

Ten New Locations

There were 10 new locations staked in the North Louisiana district and with the exception of one, all were in the Zwolle and Converse areas. In the old Sligo gas district of Bossier Parish, United Gas Public Service Co. has made location to drill its No. 1 Skannell Unit, in Section 13-17-12. The other new operations are all in the proven or semiproven areas of the Converse and Zwolle chalk rock fields of Sabine Parish, which are more or less uncertain wildcats due to the crevice producing conditions in those areas.

In Webster Parish, Gulf Refining Co.'s core test on a geophysical high east of Minden has encountered trouble by losing returns around the 1,100-foot level and will set a string of 8-inch casing after a vain attempt to correct the conditions by pumping heavy mud into the hole. This block continues to be the center of interest of the wildcats in this district. B. A. Sherrill's No. 1 fee, Bossier Parish, in Section 18-19-11, continues to be a disappointment. After recementing casing to shut off water thought to be coming from the bottom of the hole, it tested the same as on previous occasions, making about 1,000,000 feet of gas and 5,000 bbls. of salt water. During the past week, 2½-inch tubing was run into the hole but the same conditions prevailed. The test is about 5 miles northwest of the Bellevue shallow field which produces from the Nacatoch at the 300-foot level. A well was drilled in 1921 about one-half mile northeast of the Sherrill test by R. O. Roy, discoverer of the Bellevue Field, and flowed by heads about 15 bbls. daily of 30 gravity oil from 2,173 feet. The total depth of the present test is 2,207 feet, but checks only 4 feet lower than the Roy well due to surface elevation.

Daily Average Runs

The fields of North Louisiana and Arkansas showed a slight increase of 170 bbls. daily in the average runs during the past week. The former gained 270 bbls. while the latter showed a net decline of 100 bbls. The daily average runs from the several pools were:

NORTH LOUISIANA	
Caddo, light	4,445
Caddo, heavy	1,365
Converse	795
Cotton Valley	450
DeSoto and Red River	1,505
Elm Grove	400
Haynesville	3,800
Holly	295
Homer	2,600
Pleasant Hill	235
Sarepta-Carterville	800
Urania	2,955
Zwolle	6,605
Total North Louisiana	26,240
Total previous week	25,970
Increase	270

ARKANSAS	
Champagnolle	1,380
El Dorado	2,555
Lisbon	470
Miller County	640
Nevada	450
Smackover, light	2,580
Smackover, heavy	21,240
Stephens	635
Urbana	2,660
Total Arkansas	32,810
Total previous week	32,940
Decrease	130
Total both states	59,050
Total previous week	58,910
Increase	170

Wildcat Operations in Louisiana-Arkansas

(Rotary operations unless otherwise designated)

North Louisiana

BIENVILLE PARISH

Company, well, farm name, section and block—	Remarks
Poole & Johnson's No. 1 H. E. Sudduth, 1,170 ft. E and S, C Sec. 28-14-1e	Derrick.

BOSSIER PARISH

H. I. Morgan's No. 2 Smith, 1,520 ft. N, 660 ft. W, SE cor. Sec. 22-19-11	Drlg. 6,127 ft.
B. A. Sherrell, tr.'s No. 1 fee, NE NW NW Sec. 18-19-11	Arranging to run tubing 2,207 ft.

CADDO PARISH

R. E. Davidson et al's No. 1 DeWitsey MacMillan, 500 ft. N, 330 ft. E, SW cor. Lot 16, Sec. 23-16-13	S.D. 1,024 ft.
J. B. Hutchinson, tr.'s No. 1 Story Phillips, 330 ft. N and E, SW cor. SW NE SE Sec. 25-16-13	S.D. 2,200 ft.
A. D. King, tr.'s No. 1 Roach, 641 ft. E, 375 ft. N, SW cor. Sec. 4-14-16	Drlg. 1,040 ft.

CALDWELL PARISH

Hartley et al's No. 1 Taylor, most southeasterly cor. Sec. 42-14-4e	Derrick.
Terrell & Price's No. 1 La. Central Lbr. Co., 300 ft. N, 200 ft. W, SE cor. NW NE Sec. 18-11-3e	Coring 1,570 ft.

CATAHOULA PARISH

George Greer et al's No. 1 Millsap, 250 ft. S and E NW cor. Sec. 22-10n-7e	Set 10-in. 320 ft.; drlg. 1,200 ft.

DE SOTO PARISH

Bailey Gantz et al's No. 1 Jenkins, NW cor. SE SW Sec 35-13-13	Washing to bottom 3,090 ft.
Gravel Point Synd.'s No. 1 Guy, 200 ft. N and E, SW cor. Sec. 4-14-13	Drlg. 440 ft.
Hirschfield-Bailey Interests' No. 1 Mickle, 660 ft. N and E, SW cor. SE Sec. 7-13-13	Waiting on csg. 1,775 ft.
N. B. Porter's No. 1 J. W. Porter Est., 330 ft. N and E, SW cor. SE SE Sec. 23-12-13	S.D.; T.D. 1,304 ft.
D. H. Sebastian, Jr.'s No. 1 W. H. Hill et al, 200 ft. S and E, C Sec. 3-10-13	Derrick.

GRANT PARISH

L. L. Lindsey et al's No. 1 Edenborn, 250 ft. E, 150 ft. N, SW cor. SE SE Sec. 13-7-4	S.D. 40 ft.

JACKSON COUNTY

A. C. Thomas' No. 1 Johns, 330 ft. N and W, SE cor. NE NE Sec. 25-1s-3	Drlg. 2,050 ft.

OUACHITA PARISH

Hope Prod. Co.'s No. 1 Cole Hrs., 150 ft. S, 1,650 ft. W from NE cor. of SE	Comp. 2,871,000 ft. of gas 2,141 ft.

SABINE PARISH

Frank R. Foster, Inc.'s No. 1 D. E. Stephens, 330 ft. S and E, NW cor. SE NW Sec. 17-9-11	D.S. test, est. 500 bbls.; 3,150 ft.

CONVERSE DISTRICT

Arrock Oil Co.'s No. 1 Hewitt, 330 ft. N and E, SW cor. NE SE Sec. 20-9-13	Treating with acid 1,940 ft.
W. T. Boyd's No. 1 W. A. Litton, 62 ft. S, 65 ft. E, of NW cor. Blk. 30, center of Lot 3, Converse townsite, Sec. 10-9-13	Rigging up.
A. G. Craig's No. 1 Belton, 330 ft. N and E, SW cor. NW NW Sec. 33-9-13	S.D. 40 ft.
Helena O. & G. Co.'s No. 1 C. E. Pugh, 330 ft. N and E, SW cor. NE Sec. 19-9-13	Rigging up.
Helena O. & G. Co.'s No. 1 J. W. Tatum, 330 ft. N and W, SE cor. NE SE Sec. 9-9-13	Set 10-in. 75 ft.
Helena O. & G. Co.'s No. 1 E. K. Harris, 990 ft. S and W, C Sec. 10-9-13	Set 10-in. 70 ft.
Mamie S. Hammond's No. 1 Patrick, 330 ft. N, 1,320 ft. W, SE cor. Sec. 1-9-13	T.A. 3,235 ft.
R. P. Holland et al's No. 1 A. J. Burkett, 990 ft. N, 330 ft. W of C, Sec. 10-9-13	S.D. 30 ft.
H. C. Leminger's No. 1 Bowman-Hicks Lbr. Co., 338 ft. S and E, NW cor. SW Sec. 13-9-13	S.D. 3,285 ft.
Joe Modisette's No. 4 Frost Lumber Co., 990 ft. W, 330 ft. from C Sec. 21-9-13	Set 6-in. 1,532 ft.; drlg. 1,670 ft.
J. E. Sedbury's No. 1 E. K. Harris, 990 ft. W, 330 ft. S, C Sec. 10-9-13	Drlg. 30 ft.
Wm. Stewart et al's No. 1 Latham, 330 ft. N and E, SW cor. NW NE Sec. 22-9-13	Tested dry 1,904 ft; arranging to deepen.
Tex.-La.-Ark. Oil Co.'s No. 1 Bowman-Hicks, 295 ft. N, 440 ft. E, SW cor. SW NW Sec. 23-9-13	Set 10-in. 103 ft.
Homer Tyson's No. 1 G. W. Hough, 330 ft. S and E, NW cor. SW NW Sec. 31-9-13	S.D. 40 ft.
Windsor Oil Co.'s No. 1 Barr, 330 ft. N and E, SW cor. NW Sec. 15-9-13	Location.

SABINE—ZWOLLE

H. C. Maulding's No. 1 Alford, 330 ft. S and W, NE cor. NW NW Sec. 18-7-10	Moving in rig.
H. C. Maulding's No. 1 Van Vickhaven, 330 ft. N and W, SE cor. NE Sec. 3-7-11	Set 10-in. 40 ft.

WEBSTER PARISH

J. P. Evans' No. 1 Burson, 350 ft. N and E SW cor. NW SE Sec. 27-18-9	Drlg. 50 ft.

(Continued on Page 60)

New Tentative Curtailment Drawn in California; Prospecting Is Discussed for Coming Year

By L. P. STOCKMAN
Staff Correspondent, California Fields

LOS ANGELES, Calif., Oct. 30.—A tentative schedule covering allocation of production in California, prepared in accordance with rules and regulations prescribed by the new supplemental code, drastically reduces the allowable daily production of several fields producing light oil and substantially increases the daily quotas of fields yielding a heavy nonrefinable crude. This differentiation between refinable and nonrefinable crude is made mandatory under the supplemental code although the amount of each grade to be allocated is discretionary with the proration committee. The California code provides, however, that the amount of light and heavy oil must be predicated on the demand for each grade, determined at quarterly intervals.

Under the new program, which is expected to become effective shortly after November 1, San Joaquin Valley fields will be allowed to produce 180,965 bbls. per day while the Coastal fields will be permitted to produce 48,816 bbls. daily. Los Angeles Basin fields are given a daily allowable of 201,096 bbls. In addition to this, the proration committee has reserved 24,123 bbls. per day to take care of contingencies and to be distributed to certain fields. Allowable production of the Elwood Field of Santa Barbara County has been reduced from the present of 13,750 bbls. daily to 7,463 bbls. daily while production of the Dominguez Field has been cut from 19,000 bbls. per day to 10,764 bbls. Kettleman North Dome and Ventura Avenue, both light oil fields, have been reduced from 59,700 bbls. and 34,150 bbls. to 53,335 bbls. and 26,266 bbls. per day, respectively. The allowable of Long Beach has been reduced from 56,900 bbls. per day to 51,565 bbls. while Santa Fe Springs, another field producing refinable crude, has been cut from 44,300 bbls. to 33,928 bbls. per day. In the heavy oil group, such fields as Coalinga, Kern River, McKittrick, Midway-Sunset, Mount Poso, Santa Maria and Torrance which normally produce heavy nonrefinable crude, the allowable production has been substantially increased.

Considering Reserves

Although California has ample crude oil reserves for another decade, unless resources are unnecessarily dissipated by abnormal development, an unrelenting search for new fields is almost obligatory during the next several years in order to offset some of the depletion that has occurred, principally in Los Angeles Basin fields during the past few years. Due to its potential possibilities, prospectors will undoubtedly center their exploratory work in the San Joaquin Basin, although the Coastal region, comprising Ventura, Santa Barbara and San Luis Obispo Counties, will also be given a thorough testing. Since 1915 prospectors have discovered 21 major fields and a number of minor areas in California, but it is possible future discoveries will not be quite so numerous, especially since wildcatters will be obliged to hunt for hidden structures and drill out in the floor of the three principal basins where several thousand feet of sand and alluvial fill must be penetrated before favorable geological formations are encountered.

The most aggressive exploratory period in California occurred during the 10-year period from 1920 to 1930 and while several highly prolific fields were discovered along the Newport-Beverly fault zone, this work was enhanced by the existence of several rather prominent topographic highs that tended to indicate the existence of favorable structures. As a consequence of this promiscuous exploration and the discoverey of several major fields, drilling operations continued at an abnormal rate during most of the period. This era stands out as the most aggressive drilling and production period in the history of petroleum in California and can be attributed primarily to the successive exploration of topographic highs along well defined sheer zones. The only exception was when the Western Gulf stepped out into the floor of the San Joaquin Basin and developed commercial production in what is now the Fruitvale Field of Kern County.

Buried Structures

The discovery of the Fruitvale Field of Kern County is especially significant because it reveals the possibility of discovering additional fields out in the floor of the San Joaquin Valley and possibly likewise in the Los Angeles and Ventura Basins. There is practically no surface evidence of structure in the Fruitvale Field, although a general rise was noticed when the area was mapped with a plane table. Subsequent to the discovery of the Fruitvale Field, the Hogan Petroleum Co. and Shell Oil Co. proved up the existence of a substantial accumulation in the Mountain View Field. Fruitvale and Mountain View are the only two fields to be proven commercially productive on the Bear Mountain fault zone, but the successful culmination of exploration work in these two fields enhances the attractiveness of the Union Avenue and Comanche Point districts.

The Union Avenue area is approximately midway between the Fruitvale and Mountain View Fields and appears to have considerable merit from an exploratory standpoint. The Western Gulf, just previous to its wildcat operations in the Fruitvale Field, drilled a series of four tests in the Union Avenue district but failed to develop commercial production. One of these wells showed considerable promise but the entire quartet was subsequently abandoned due to the inability to show commercial production. Union Oil Co. is drilling a wildcat east of Western Gulf's pioneer work and the outcome may have a substantial bearing on the production possibilities of the district. West of the four wells drilled by Western Gulf, the Alta Oil Co. is drilling in Section 6-30-28 and while it may be another several weeks before this wildcat drills through the Kern River series and encounters the Santa Margarita this project will be closely watched. Acreage in the Comanche Point district, the most easterly area along the Bear Mountain fault zone, is closely held and a deep test is expected to be drilled in the not far distant future.

Important Discoveries

Although only a few fields have been discovered in the San Joaquin Valley during the past decade, the discoveries made have been of major importance. The Kettleman North Dome Field, discovered by the Milham Exploration Co. in 1928 appears to be the greatest oil field discovered in California and if it lives up to expectations should yield approximately 2,000,000,000 bbls. of crude oil, or about 50 per cent as much as all the fields of the state have produced to date. The recoverable reserves of the Kettleman North Dome Field are more or less a matter of personal opinion, but we must not overlook that this field has an unusually large drainage area and is almost definitely assured of developing substantial production in the Eocene rocks. The Kettleman North Dome Field, due to strict observance of the California curtailment program, has produced only 64,382,446 bbls. up to October 1, 1933, but this does not indicate its true potentiality as it is capable of producing approximately 250,000 bbls. per day.

The Kettleman Middle Dome Field is relatively insignificant when compared with the North Dome, but if the recovery per acre equals that of the North Dome, it will be the second largest field completed in the state. In addition to the discovery of these two new fields, Belridge Oil Co. has greatly increased the recoverable reserves of the San Joaqin Valley by developing substantial production in the Eocene formation in the North Belridge Field of Kern County. This is of paramount importance because if the Eocene has been found productive in the North Belridge Field it should be found similarly productive in both the North and South Domes of the Kettleman Hills anticline. In the South Belridge Field of Kern County, General Petroleum is drilling a deep test on the Berry lease to determine the productivity of the Temblor or underlying Eocene, both of which have been proven productive in the North Belridge Field. General Petroleum has already drilled through 9,100 feet of brown shale and should pick up the top of the Temblor in the near future. This is the greatest thickness of brown shale penetrated in any California well.

Associated recently landed a string of 11¾-inch casing in No. 1 Williamson, a deep test which the company is drilling in the Lost Hills Field of Kern County in conjunction with several other operators, and while encouraging streaks of oil sand have been encountered from time to time, the company has not yet picked up a sufficient thickness of oil sand to justify the expectation of finishing a commercial producer. Casing is being landed to cement off a high head water which would retard development. This well blew in recently flowing salt water at the rate of approximately 40,000 bbls. per day. No. 1 Williamson appears to be running substantially lower on the structure than anticipated but is still a good bet as lower zones in California are larger in areal extent than those at shallower depths. The Lost Hills Field will become an important factor in future production if Associated or some other operator gets production in either the Temblor or Eocene, as it is substantially larger than

TENTATIVE CALIFORNIA CURTAILMENT FOR NOVEMBER, 1933

	Potential B/D	Quota B/D	Total allowable	Per cent curtailed	Per cent allowable
San Joaquin Valley—					
Belridge	26,200	5,400	5,498	79.02	20.98
Coalinga, East	22,975	8,620	14,201	40.77	59.23
Coalinga, West	7,880	5,630	7,342	6.83	93.17
Coffee Canyon	3,830	2,100	1,961	48.80	51.20
Elk Hills	20,180	10,700	8,812	56.34	43.66
Fruitvale	7,200	4,000	3,327	53.79	46.21
Kern Front	11,960	5,900	7,749	35.21	64.79
Kern River	10,755	2,400	2,980	27.71	72.29
Kettleman Middle Dome	1,500	575	606	59 60	40.40
Kettleman North Dome	251,200	59,700	53,335	78.76	21.23
Lost Hills	5,000	1,400	1,667	66.66	33.34
McKittrick	4,150	1,700	3,034	27.42	72.58
Midway-Maricopa	87,260	49,300	58,404	33.07	66.93
Mount Poso	25,225	7,700	9,823	61.06	38.94
Mountain View	550	....	....	100.00	.....
Round Mountain	10,140	1,900	1,755	82 69	17 31
Wheeler Ridge	480	480	471	1.87	98.13
Others	285	220	...	....	.....
Total	497,800	170,725	180,965	63 65	36 45
Coastal Districts—					
Capitan	1,425	....	....	100.00	....
Elwood	30,495	13,750	7,463	75.53	24.47
Rincon	2,850	1,600	1,336	53 61	46 39
San Miguelito	2,925	1,050	....	100.00	.....
Santa Barbara	800	635	1,428	....	.....
Santa Maria	16,220	4,750	6,746	58 41	41 59
Summerland	100	80	100	....	100 00
Ventura Avenue	80,295	34,150	26,266	67.29	32.71
Ventura-Newhall	5,940	3,250	5,423	8.70	91 30
Others	60	60	54	10 00	90.00
Total	141,150	59,325	48,816	65.42	34 58
Los Angeles Basin—					
Alamitos Heights	3,155	2,100	2,224	29.51	70.49
Brea Olinda	17,250	9,200	10,260	40.86	59.14
Dominguez	39,300	19,000	10,764	72.61	27 39
East Coyote	3,250	1,800	3,256	30.58	69.42
Huntington Beach—new	64,945	17,550	19,389	70 15	29.85
Huntington Beach—old	22,425	12,150	12,429	44.58	55.42
Inglewood	16,235	10,700	7,466	54.01	45.99
Lawndale	250	250	238	4.80	95.20
Long Beach	90,900	56,900	51,565	43.27	56.73
Los Angeles	950	950	950	....	100.00
Montebello—new pool	750	....	....	100.00	....
Montebello—old pools	7,140	5,550	4,909	31.25	68.75
Playa Del Rey	12,935	9,200	7,780	39.85	60.15
Potrero	675	270	594	25.33	74.67
Richfield	12,925	6,750	8,776	32.10	67.90
Rosecrans	4,660	2,900	3,031	34.96	65.04
Santa Fe Springs	71,525	44,300	33,928	52.57	47.43
Seal Beach	18,550	5,500	6,548	64.70	35.30
Torrance-Hermosa	9,050	6,750	9,050	....	100.00
West Coyote	19,640	8,550	7,519	61.72	38.28
Whittier	1,230	1,200	1,230	....	100.00
Others	310	280	280	....	100.00
Total	418,150	224,950	201,096	51.91	48 09
Grand total	1,057,100	455,000	430,877	59 24	40.76
To be distributed for adjustment			24,123		
			455,000	56.96	43.04

either North or South Belridge. Ohio Oil Co. recently spudded in a new wildcat in the Buena Vista Lake district of Kern County and this location appears to have considerable merit. The Buena Vista structure, according to geophysical exploration, covers an extensive area and will be of major importance if commercial production is developed. In contrast with general practice in California, this rig has been erected on stilts, which brings the floor of the derrick up to an elevation comparable with drilling practice in the Texas and Mid-Continent Fields. This procedure has been followed to preclude the possibility of being flooded out in the event of a heavy rainfall, as the test is in the bed of Buena Vista Lake. The usual California cellar would prove impracticable under the circumstances. Several companies have acquired substantial blocks of acreage east of the Ohio's test.

Coastal Region

There are a number of tests under way in the coastal region but none looks especially promising. Lincoln Drilling Co.'s test on the Williams lease in the Summerland Field picked up the top of the Sespe at about 1,600 feet but the company will undoubtedly continue drilling to make a conclusive test. Meganos Oil Co.'s outpost in the Purisima section of the Santa Maria Field has shown some favorable indications but has not yet encountered a sufficient thickness of oil sand to justify a test. In the Cuyama Valley, Cuyama Oil Co. has not yet logged anything of particular interest in its wildcat in Section 12-10-27. Standard is not expected to undertake any additional drilling in the Goleta gas field of Santa Barbara Co., where it recently completed a gas well on the Chase & Bryce lease.

Although operators in the Elwood Field have not yet received approval of their projected drilling program covering exploitation of the Sespe, they are still exploring in several wells. Barnsdall & Rio Grande, codiscoverers of the field, proved up the Sespe about two years ago but a drilling moratorium has retarded development. Expiration of this agreement has made it possible for operators to resume work but they will not be allowed to produce until requirements of the code have been complied with. Barnsdall and Rio Grande appear to have the making of a good well in the Sespe on the Doty lease but Signal Oil & Gas Co.'s No. 2 on tideland permit No. 98 looks rather dubious. The latter well topped the Sespe at 3,966 feet and has already penetrated these rocks for approximately 1,000 feet without logging anything of unusual importance. The Elwood Field has produced 44,630,561 bbls. of crude oil from the Vaqueros up to October 1, and will greatly increase this figure when the underlying Sespe is developed.

Exploration Necessary

It might seem rather superfluous for California wildcatters to undertake an aggressive exploration program in view of the large recoverable reserves in the Kettleman North Dome, Kettleman Middle Dome, Lost Hills-Belridge, Elwood, Santa Maria, Ventura Avenue, Coyote, Domingues, Fullerton, Inglewood, Montebello and Seal Beach Fields but one must not lose sight of the fact that oil and gas are wasting assets and it is therefore obligatory for the industry to continue prospecting work to assure an ample supply for some time to come. Practically all of the territory from Coalinga south to Santa Ana and from the mountains to the sea is potential oil land, but due to the heavy wildcat mortality and diminishing number of untested visible structures, operators will find it necessary to undertake an aggressive exploration beginning next year. This is especially true of several large operators who must discover additional productive acreage to maintain their present position in the industry.

New fields have been discovered with clocklike regularity during the past 10 years but the frequency interval has lengthened out since the end of 1929. Following the discovery of Ventura Avenue by State Co. in 1916, Standard stepped out in 1917 and opened up the Montebello Field of Los Angeles Basin. No new discoveries were recorded in 1918 but in 1919 Standard completed a commercial producer in the Elk Hills Field and matched this by opening the Richfield district in Southern California. The big parade began in 1920, following discovery of the Huntington Beach Field by Standard, and in less than a year the Shell had opened up Long Beach and the Union brought in No. 1 Bell, the discovery well in the Santa Fe Springs Field. In 1922, Chanslor-Canfield Midway Oil Co. completed No. 1 Del Amo as a commercial producer in the Torrance Field and in 1923 Union discovered Dominguez and Standard chalked up a new district at Wheeler Ridge. In 1924 Union proved up Rosecrans and Standard discovered the Inglewood Field. There were no discoveries recorded in 1925 but Continental made up for lost time by finding a new field at Seal Beach and Shell discovered a favorable accumulation in the Mount Poso area. In 1927 Associated opened up Potrero, Chanslor-Canfield Midway Oil Co., Rincon, and Elbe Land & Oil Co., Round Mountain. The year 1928 witnessed discoveries by Barnsdall-Rio Grande at Elwood, Milham Exploration Co. at Kettleman Hills, Western Gulf at Fruitvale and Smith Development Co. at Lawndale. Other recent discoveries were recorded by Ohio Oil Co. at Playa Del Rey and General Petroleum at Capitan in 1929, Continental Oil Co. at San Miguelito in 1931, Petroleum Securities and Standard in the Kettleman Middle Dome and Hogan Petroleum and Shell Oil Co. in the Mountain View, or Weed Patch area.

Long Beach

Drilling operations in the Long Beach Field were productive of three completions during the week. D. D. Dunlap's No. 7 Signal, finished at 4,752 feet, was brought in pumping 570 bbls. of 29.7 gravity oil per day while Plymouth Oil Co.'s No. 14 was completed doing 312 bbls. of 29.2 gravity oil per day on the beam from 7,595 feet after the hole had been redrilled to 5,320 feet. R. E. Bush Oil Co. completed No. 3 Brennecke pumping 121 bbls. of 26.3 gravity oil per day from 5,430 feet and is starting bailing operations on No. 2 fee at 3,931 feet after finishing the hole with a 4¾-inch liner including 266 feet of perforated.

J. W. Weaver and St. Helen's Petroleum Co. are expected to complete their respective projects in the Richfield district of Los Angeles Basin within the next fortnight as both wells have picked up the pay in the Berea zone. Geneva Oil Co. concluded drilling operations on No. 2 McFadden at 4,480 feet from which depth it is good for about 35 bbls. of dirty oil per day. Imperial Gypsum & Oil Co. is building a new rig over No. 2 Shanklin originally drilled and abandoned by another operator. Union Oil Co. has cemented a 6⅝-inch water string in No. 5 Thompson & Goodwin at 3,665 feet and should conduct a production test within 10 days. In the West Coyote Field, Plymouth Oil Co. cored oil sand in No. 1 McNally at 5,330 feet and has landed and

(Continued on Page 71)

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	Oct. 14		Oct. 7			
	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Intercoastal-domestic—						
Crude oil	.....	.....	.....	.....	.....	116,312
Fuel oil	697,816	99,688	89,983	12,855	1,848,465	.....
Diesel and gas oil	.....	.....	.....	.....	1,200,559	763,622
Gasoline	74,142	10,592	624,336	89,191	8,782,668	6,558,675
Kerosene	.....	.....	.....	.....	618,966	154,372
Foreign exports—						
Crude oil	50,142	7,163	73,754	10,536	5,793,762	6,645,924
Fuel oil	119,757	17,108	85,167	12,167	6,453,049	6,666,681
Diesel and gas oil	148,509	21,214	.....	.....	2,649,992	1,932,782
Gasoline	219,818	31,403	62,238	8,891	4,669,820	6,726,477
Kerosene	17,019	2,431	56,744	8,106	1,581,984	2,371,949
Naphtha distillates	.....	.....	.....	.....	.....	120,075
Coastwise domestic—						
Crude oil	137,523	19,646	.....	.....	5,764,921	11,508,757
Fuel oil	118,047	16,864	252,442	36,043	8,028,513	9,360,228
Diesel and gas oil	7,542	1,077	.....	.....	897,112	996,389
Gasoline	187,493	26,785	280,333	40,048	10,137,262	11,958,091
Kerosene	1,783	255	.....	.....	155,103	133,421
Naphtha distillates	.....	.....	.....	.....	27,651	.....

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Diesel and gas oil	.....	.....	.....	.....	511,897	556,606
Gasoline	.....	.....	.....	.....	804,548	844,423
Kerosene	.....	.....	.....	.....	482,430	152,611
Lubricants	.....	.....	.....	.....	33,934	23,829
Foreign exports—						
Crude oil	.....	.....	46,180	6,597	1,542,286	778,312
Fuel oil	177,402	25,343	110,471	15,782	1,562,213	831,058
Diesel and gas oil	.....	.....	.....	.....	835,257	519,332
Gasoline	102,971	14,710	92,506	13,215	3,382,787	3,162,572
Kerosene	.....	.....	.....	.....	841,225	882,858
Lubricants	.....	.....	.....	.....	101,472	30,094
Coastwise domestic—						
Fuel oil	.....	.....	127,141	18,163	2,874,900	2,427,893
Diesel and gas oil	.....	.....	10,073	1,439	189,323	323,014
Gasoline	.....	.....	282,932	40,419	3,328,427	3,014,771
Kerosene	.....	.....	.....	.....	95,204	91,723
Lubricants	.....	.....	.....	.....	2,751	.....

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status:
Palm Ridge Oil Co., No. 1 Palms, Los Angeles Co.	2- 2-15	7,150	suspended
Pacific Gulf, No. 1 Athens, Los Angeles Co.	19- 3-12	6,034	suspended
Pacific Dev. Co., No. 1 Wilmington, Los Angeles Co.	16- 3-13	901	cemented
Wilmington Oil Co., No. 1 Wilmington, Los Angeles Co.	28- 4-13	4,516	suspended
Sunrise Pet. Co., No. 1 Domingues, Los Angeles Co.	3- 4-13	5,250	remair mach.
Kelly & Son, No. 1 Torrance, Los Angeles Co.	7- 4-13	mtl.	building rig
Baldwin Hills Pet., No. 2 Inglewood, Los Angeles Co.	17- 2-14	mtl.	building rig
Oakes & Mead, No. 1 Lyndwood, Los Angeles Co.	31- 2-12	4,940	reaming
Celito Oil Co., No. 1 Monterey Park, Los Angeles Co.	25- 1-12	5,319	cemented
Community Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	5,281	suspended
Universal Consd., No. 2 Montebello, Los Angeles Co.	5- 2-11	2,503	sd. sh. drilling
Universal Consd., No. 3 Montebello, Los Angeles Co.	5- 2-11	1,147	sd. sh. drilling
Nance, M. K., No. 1 Montebello, Los Angeles Co.	6- 2-11	rig	suspended
Signal Pet., No. 1 Puente, Los Angeles Co.	14- 2-10	4,905	testing
Recovery Oil Co., No. 1 Sunset Beach, Los Angeles Co.	16- 5-11	1,790	hd. conglomer.
Willetts Pet., No. 1 Saugus, Los Angeles Co.	35- 5-16	3,074	suspended
Alpha Oil Co., No. 1 Calabasas, Los Angeles Co.	22- 1-18	1,217	suspended
Marbie, Willard, No. 1 Van Nuys, Los Angeles Co.	6- 2-16	2,760	suspended
Plymouth Oil Co., No. 1 West Coyote, Los Angeles Co.	24- 3-11	5,330	hd. sd. drilling
Vaqueros Major Oil Co., No. 1 Huntington, Orange Co.	tideland	rig	suspended
Nuoil Co., No. 1 Newport, Orange Co.	29- 6-10	5,090	br. sh. drilling
Mineral Exploration, No. 1 Capistrano, Orange Co.	8- 8- 7	4,302	suspended
Saddleback Oil Co., No. 1 El Toro, Orange Co.	3- 6- 7	80	suspended
Placentia Dev. Co., No. 1 Placentia, Orange Co.	21- 3- 9	3,170	sd. sh. drilling
Brown, W. F., No. 1 Atwood, Orange Co.	26- 3- 9	rig	suspended
Rubens, Sy., No. 1 Atwood, Orange Co.	19- 3- 9	500	sd. drilling
Bartholomae Oil Co., No. 1 Coyote, Orange Co.	12- 3-10	rig	rigging up
Spindle Top Oil Co., No. 1 Salton Sea, Riverside Co.	25- 7-10	3,590	suspended
Great American Pet., No. 1 Chino, San Bernardino Co.	18- 2- 8	2,660	fish D/F
Great American Pet., No. 2 Chino, San Bernardino Co.	18- 2- 8	1,550	fishing
McCarthy, C. F., No. 1 Chino, San Bernardino Co.	14- 3- 6	803	sd. sh. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status:
Monterey Expl., No. 1 Point Concepcion, Santa Barbara	33- 5-33	2,653	plug back
Lincoln Drlg. Co., No. 3 Summerland, Santa Barbara Co.	21- 4-26	2,205	rd. sh. drilling
Meganos Oil Co., No. 1 Purisima, Santa Barbara Co.	28- 8-34	3,865	br. sh. drilling
Barnsdall-Rio Grande, No. 8 Doty Elwood, Santa Barbara	15- 4-29	3,864	deep test
Signal O. & G. Co., No. 2 Elwood, Santa Barbara Co.	tideland	4,856	deep test
Cuyama Oil Co., No. 1 Cuyama, Santa Barbara Co.	12-10-27	3,915	hd. sh. drilling
Indian Pet., No. 1 Shude, Ventura Co.	tideland	3,484	will deepen
Woodrow Pet., No. 1 Rincon, Ventura Co.	4- 3-24	7,602	cleaning out
Hancock Oil Co., No. 1 Fillmore, Ventura Co.	13- 4-19	2,373	will deepen
Oil Ridge Oil Co., No. 1 Fillmore, Ventura Co.	1- 4-19	rig	rigging up
Driggs Pet., No. 1 South Mountain, Ventura Co.	17- 3-20	2,113	sd. sh. drilling
Kneiper & Atha, No. 1 Bardsdale, Ventura Co.	7- 3-19	1,100	gr. sd. drilling
Williamson & Donaher, No. 1 Simi, Ventura Co.	36- 3-18	790	cemented
Dabney, H. R., No. 1 Simi, Ventura Co.	22- 2-18	1,000	suspended
C. C. M. O., No. 3-A Miguelito, Ventura Co.	23- 3-24	4,166	suspended
Midlands Pet., No. 1 Ojai, Ventura Co.	9- 3-23	7,841	C/P 5,522 6,512
Wilshire Oil Co., No. 1 Sulphur Mountain, Ventura Co.	20- 4-21	2,198	suspended
Kirk, W. A., No. 1 Sulphur Mountain, Ventura Co.	21- 4-21	1,075	br. sh. drilling
Mosher, J. W., No. 1 Santa Paula, Ventura Co.	22- 4-21	1,570	suspended
Las Posas Pet., No. 1 Las Posas, Ventura Co.	22- 3-20	5,000	suspended
International Oil Developers, No. 1 Conejo, Ventura Co.	33- 2-20	2,843	redrilling
Hub Pet. Co., No. 1 Gould Hills, Kern Co.	22-29-21	6,840	suspended
Furman, T. H., No. 2 Gould Hills, Kern Co.	27-29-21	5,335	suspended
Casa Mira Oil Co., No. 1 Belridge, Kern Co.	29-28-20	5,000	suspended
General Pet., No. 1 Belridge, Kern Co.	30-28-21	9,253	br. sh. drilling
Cumberland Oil Co., No. 2 Devils Den, Kern Co.	17-26-18	3,270	suspended
Lincoln Pet., No. 1 Devils Den, Kern Co.	10-25-18	3,172	suspended
Hanna, Tom, No. 1 Devils Den, Kern Co.	25-25-18	3,516	suspended
Pyramid Hills Oil Co., No. 1 Devils Den, Kern Co.	24-25-18	4,140	test W.S.O.
Fowler, F., No. 1 Blackwell Corner, Kern Co.	15-26-19	3,170	suspended
Associated, No. 1 Lost Hills, Kern Co.	2-26-20	6,041	to set pipe
Howells Bros., No. 1 Round Mountain, Kern Co.	32-28-29	1,260	br. sh. drilling
Kena Pet. Co., No. 1 Lerdo, Kern Co.	14-29-27	4,531	suspended
Ohio Oil Co., No. 1 Buena Vista Lake, Kern Co.	31-31-26	637	hd. sh. drilling
Caravel Pet. Co., No. 1 Edison, Kern Co.	19-30-30	1,801	suspended
Union Oil Co., No. 1 Union Avenue, Kern Co.	15-30-28	3,175	ac. sh. drilling
Alta Oil Co., No. 1 Union Avenue, Kern Co.	6-30-28	3,750	sd. sh. drilling
Shell Oil Co., No. 1 Mountain View, Kern Co.	29-30-29	5,910	resume work
Shell Oil Co., No. 2 Mountain View, Kern Co.	29-30-29	5,838	rig pump
Hogan Pet. Co., No. 2 Mountain View, Kern Co.	29-30-29	5,750	sd. sh. drilling
Bankline Oil Co., No. 1 Mountain View, Kern Co.	4-31-29	5,950	cemented
Barnsdall Oil Co., No. 1 Mountain View, Kern Co.	31-30-29	6,444	suspended
Long Beach Pet., No. 1 Mountain View, Kern Co.	29-30-29	5,845	sd. sh. drilling
Mohawk Pet., No. 2 Mountain View, Kern Co.	30-30-29	5,609	rig compressor
Mohawk Pet., No. 3 Mountain View, Kern Co.	30-30-29	4,400	sd. sh. drilling
Comanche Oil Co., No. 1 Comanche, Kern Co.	15-32-29	rig	suspended
Badger Oil Co., No. 1 Wheeler Ridge, Kern Co.	31-11-19	4,483	suspended
Gatton & Luethe, No. 1 Madera, Madera Co.	32-10-17	3,020	suspended
Russ Oil Synd., No. 1 Kingsburg, Fresno Co.	20-12-11	3,630	gr. sh. drilling
Bergman, Harry, No. 1 Kingsburg, Fresno Co.	12-12-11	4,279	fish D/P
Graham & Loftus, No. 1 Raisin City, Fresno Co.	26-15-18	5,906	suspended
Emerich Oil Co., No. 1 Mendota, Fresno Co.	35-13-13	3,220	suspended
Western Gulf, No. 1 S. P., Fresno Co.	3-17-15	6,160	sd. sh. drilling
Roscoe, D. L., well No. 1, Fresno Co.	36-16-14	rig	suspended
Hogan Pet. Co., No. 1 Joaquin Ridge, Fresno Co.	28-20-16	6,605	suspended
Superior Oil Co., No. 1 Jacalitos, Fresno Co.	6-22-16	5,615	hd. sh. drilling
Kent & McDonald, No. 1 Carrizo Plains, San Luis Obispo	3-32-22	3,330	suspended
Paso Robles Oil Co., No. 1 Edna, San Luis Obispo Co.	27-27-11	4,191	suspended
Guess, E. B., No. 1 Corcoran, Kings Co.	7-21-21	6,197	suspended
Brown, A. M., well No. 1, Kings Co.	10-23-19	1,205	suspended
Knudsen & Schmidt, No. 1 Reef Ridge, Kings Co.	36-23-17	6,873	suspended
Dudley Dome Oil Co., well No. 2, Kings Co.	9-22-20	370	cemented
Mages & Stone, No. 2 Alpaugh, Kings Co.	33-21-22	3,149	suspended
Cardinal Oil Co., No. 1 Los Banos, Merced Co.	26-10- 9	rig	rigged up
Na-Pa Oil Co., No. 1 Griffith, Napa Co.	7- 8- 3	3,750	suspended
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	5- 2-10	4,760	hd. sh. drilling
Pacific Northern Oil Co., No. 1 Guinda, Yolo Co.	23-12- 3	5,320	cemented
Buttes Oilfields Co., No. 1 Marysville, Sutter Co.	35-16- 1	2,731	gas—shut in
Buttes Oilfields Co., No. 2 Marysville, Sutter Co.	35-16- 1	3,925	sd. sh. drilling
Tehama Pet. Co., well No. 1, Glenn Co.	4-22- 5	4,696	cemented

Marts & Beavens' No. 3 Riddle Turns Out to Be the Biggest Well Drilled in North Dale Pool

By B. D. STEVENSON
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Oct. 30.—Marts & Beavens got the attention of the oil industry back to Bastrop County the past week by bringing in No. 3 Riddle in the North Dale Pool, 2,200 feet from the southwest line and 200 feet from the northwest line of John Maximillian Survey No. 22, flowing at the rate of 2,000 bbls. daily with Dale lime from 2,100-2,110 feet and Serpentine from 2,110-2,125 feet. Casing was set at 2,080 feet.

This is the biggest well this field has reported thus far and it ranks with the best producers in the old Lytton Springs Pool in Caldwell County. Wells in the North Dale Pool were small till Marts & Beavens brought in their No. 1 Riddle for 250 bbls. daily. The field is about 2 miles north of the Dale Field, 5 miles east of the Lytton Springs Pool and 5 miles southwest of the Hilbig Pool.

On the same day Marts & Beavens brought in their No. 2 Orgain in the new pool at Cedar Creek, 8 miles due north of the North Dale Pool, and it made 200 bbls. daily from Serpentine at 1,705-1,711 feet.

It was a week of good luck for the Serpentine operators, for the Cole Petroleum Co.'s No. 1 Rowe on the west side of the Cedar Creek Pool had a good show of oil in Serpentine at 1,721-26 feet and was drilling in late in the week, and Marts & Beavens' No. 1 Smith, in the Blalock Survey on the east side of the Schimmel Pool had Serpentine at 1,500-1,518 feet and it looked like a well. All of them are important extensions. The Schimmel Pool is 6 miles northwest of the North Dale Pool and 6 miles southwest of the Cedar Creek Pool.

Edwards Lime Tests

Another feature of the week was the abandonment of two Edwards lime tests in the Balcones Fault zone in one day, both in Guadalupe County. O. W. Killam's No. 1 fee, 6 miles southeast of Seguin in the Green DeWitt Survey No. 13, topped the Edwards at 2,613 and stopped at 2,618 feet, dry, with an odor of sulphur but not much water. The other, Walton & Weinert's No. 1 Sorrell, in the southwest corner of the county, close to the Wilson County line, topped the Edwards at 2,645 feet and drilled to 2,654 feet and was still making hole to complete the contract depth, but is a failure with sulphur water. Both tests seemed to run quite normal.

This leaves the Balcones for the time being without any important Edwards lime test except the Amerada Petroleum Co.'s No. 1 Doerring in southwestern Frio County, a deep test to Edwards, and for the time being it is tied up with a bad case of drill stem stuck in the hole and with core barrel on the drill stem. Total depth, 5,849 feet.

There are two other prospective tests in Guadalupe, A. F. Barnhill's No. 1 Phullman, 6 miles due east of Seguin and 3 miles north of Killam's abandoned test, and L. E. Trout's No. 1 McKey, 4 miles southwest of the Darst Creek Field. Both are getting ready to start.

Bexar County still has a flock of operators looking for shallow oil and during the past week the Von Ormy Oil Co. completed the No. 1 E. B. Carruth, 1 mile south of Von Ormy for about a 25-bbl. well bailing. It is in the western part of the county and total depth is 780 feet. George O'Neill's No. 1 Neimann, 2 miles south of the Eckert Pool in eastern Bexar County at about 815 feet has a showing of oil and some think he is likely to find another producing spot there.

Two miles south of Southton Pool and about 8 miles south of San Antonio, H. A. Pagenkopf is held up at total depth of 2,010 feet in his No. 1 Goeth, which showed considerable gas. First he was delayed trying to reset casing and is delayed now trying to fish some liner out of the hole struck when the string of casing with liner was dropped. All of the casing was removed but one joint of liner is still in the hole.

Laredo District

In the Laredo district five good wells were completed in the North Government Wells Pool, adding considerable production and two of them worth special mention, and a half mile west of the south end of the original Government Wells Pool Rodney DeLange's No. 1 Lundell in Survey No. 60 had a good showing of oil in sand at 2,250 feet and, unable to get a drill stem test, decided to set casing.

At the northeast corner of the North Government Wells Pool Navarro Oil Co.'s No. 11 C. W. Hahl, 330 feet from north and west lines of the west half of survey No. 360, same in for 30 bbls an hour in sand at 2,296-2,307 feet. It makes the field at the north end five locations, or one-half mile, wide. At one point a little farther south the field is three wells wider than that, but Sun Oil Co. is offsetting Navarro on the west and Humble was in process of bringing in its No. 21 C. W. Hahl on the east end of that row of producers, 990 feet from the west line and 330 feet from the north line of the east half of Survey No. 360, with the prospect that it will make a well.

With the tests now drilling, within a month the Navarro Oil Co. will have made a well on every location of the west half of Survey No. 360, a total of 3½ in all. All its outside locations have made producers. Humble has one complete string of producers up along the west side of the east half of Survey 360 and tests now drilling will complete all but two of the next string.

The outside line of wells are coming in for about normal production so there is nothing to indicate how much the north end will widen out. Extension north is all in the hands of the Magnolia Petroleum Co. which this week is completing Nos. 3 and 4 along the south line of Survey No. 208 and still will have two others to drill to complete the offsets to the north row of producers of the Navarro and Humble.

At the south end Russ Petroleum Co. got a good well in Survey No. 46 in a territory where there has been no active drilling for some time. Its No. 2 Riley came in for about 65 bbls. an hour in the regular sand.

Sensation This Week

The sensation of the week was the Rodney DeLange No. 1 Lundell, 330 feet from the south line and 150 feet from the east line of the southwest quarter of Survey No. 60, a half mile west of production at the south end of the original Government Wells Pool and a half mile northwest of the No. 11 Paul White of the Humble in Survey No. 249 at the north end of the South Government Wells Pool. He had sand at 2,207-14 and 2,230-50 feet, which corresponds to the depth of the Government Wells sand in the producing fields. He was unable to get a drill stem test and it was thought the showing warranted setting casing. More will be known after the test is made but if it makes a well it will be a proper subject for study on the part of geologists and may have an important bearing on possible extensions of both the old field and the south field.

There has been a disposition lately to fill out all the vacant locations in the north end of the North Government Wells Pool. Hamill & Hamill and the Highland Oil Co. and Reynosa Oil Corp. have each drilled vacant inside locations on their 80-acre leases in the east half of Survey No. 42 and Magnolia has one inside location left to drill on the south 80 acres of the east half of Survey 42 and every location will have been drilled. There are many vacant inside locations at the south end of the field to be drilled and the fever to drill may overtake the operators at that end.

Central Producers, Inc., has started to fill out its locations on its lease, the NW NW of Survey No. 44.

Wells Moving Slowly

Neither R. D. Kelly's No. 1 Foster nor the Texas Co.'s No. 5-A Duval County Ranch Co. has moved fast since Buchanan completed his No. 1 in Survey No. 206 opening a new field. Texas is a north offset to Buchanan & Kelley, a south offset. Buchanan's well after building more storage was opened again and it flowed 325 bbls. in 14 hours. Humble is a little delayed in getting pipe line connection to the well but was to have it completed over the week end.

This new field in a new sand 4 miles due north of the North Government Wells Pool is liable to see considerable drilling if the pool widens out and production holds up. The acreage is somewhat cut up in small tracts. Texas Co. and Magnolia are the major companies sitting in with the acreage north and south, usually considered the best in that part of the county and Tidal has all of Survey No. 200 lying northwest of No. 206 with the exception of 40 acres in the southeast corner held by Johnny Hornbeck.

Among the wildcatters working the Government Wells play up into McMullen there was not much change except that Killam's No. 2 Wood-Welder, 1½ miles south and slightly east of the Buchanan well and 2½ miles north and slightly east of the North Government Wells Pool in sand at 1,443-46 feet had a little showing of oil. Buchanan is producing from Cole sand at 1,475-83 feet and the discovery well of the North Government Wells Field was a Cole sand producer at 1,573 feet. Also the Cloyes No. 1 Hagist in Survey 265 was showing some oil at 1,400 which may be the Cole sand.

Nueces County

Three tests in Nueces County are getting attention. Banquette Oil Co.'s No. 1 Ingram is about 3,500 feet southeast of the Houston Oil Co.'s No. 1 Peters drilled a few years ago and producing since a good volume of high gravity oil or gasoline at 6,012 feet. Nothing has been done since Houston Oil completed that well to further develop the deep stuff. Banquette is running about right and the last depth given was about 3,500 feet and drilling. Texon Royalty Co.'s No. 1 McCoy about 3½ miles south of the Houston Oil Co.'s well, is drilling below 4,450 feet in search of the same production and it seemed to be on structure.

The other Nueces test getting attention is the Southwest Oil Co.'s No. 1 Poenisch south of Corpus Christi and at the last report it was at 2,300 feet.

Wildcat Operations in Southwest Texas

Week Ending October 28

Company, well, farm name, section and block—	Remarks:
ATASCOSA COUNTY	
A. Blume's No. 1 Shaw, 690 ft. from N line, 1,780 ft. from E line of 100-ac. tract in W. Farquhar Sur. No. 275	T.D. 1,996 ft.; abd.
E. O. Burton's No. 1 Blankenship, 1,470 ft. from NW line, 1,830 ft. from SW line of 320-ac. tract, in T. Orr Sur. No. 176	Moving in rig.
BASTROP COUNTY	
Cole Pet. Co.'s No. 1 Cole, 150 ft. from S and E lines of 700-ac. tract, Blk. 30, in R. Gage Sur. No. 10	T.D. 1,726 ft.; in Serpentine; set csg.; W.O.C.
Ca-Tex O. & G. Dev. Corp.'s No. 1 Pendergrass, 1,343 ft. from NE, 310 ft. from SE line of 136-ac. tract in Henry Warnell Sur.	Rigged up and S.D.
Three Oil Co.'s No. 1 M. Ingram, 1,250 ft. from SW line, 940 ft. from SE line of tract in M. Morgan Sur.	Rigged up.
BEE COUNTY	
Grisham et al's No. 1 Powell, 900 ft. N, 500 ft. W of SE cor. of J. A. Reed Sur.	Drlg. wtr. well.
Holland Oil Co.'s No. 1 Copeland, NE cor. of 400-ac. tract in Pace Sur.	T.D. 4,005 ft.; abd.
W. P. McLain's No. 1 Weiss, 400 ft. E of line between E. S. Price's Nos. 1 and 2 Weiss	T.D. 4,206 ft.; sand 4,162-96 ft.; tested 275 bbls. in 12 min.; coring deeper.
BELL COUNTY	
Gus Winston et al's No. 3 Warrick, 100 ft. N of James Scoggins' No. 1 Warrick, in Elijah Ingram Sur.	T.D. 1,590 ft.; drlg.
R. S. Wilson's No. 1 Davenport, 200 ft. from W line, 700 ft. from S line of J. L. Herred Sur.	T.D. 1,335 ft.; standing.
BEXAR COUNTY	
C. I. Albertson's No. 2 C. Hoke estate, 675 ft. from E line, 250 ft. N of Medina River in Jose Maria Barrera Sur.	T.D. 750 ft.; bailing.
F. J. Von Dolden et al's No. 1 Frank Webber, 150 acres in J. Montes No. 6	T.D. 100 ft.; dropped.
Austin Hull's No. 1 Classen, 265 ft. from W line, 2,500 ft. from S line of tract, 12 miles N of San Antonio.	T.D. 1,810 ft.; dropped.
LaSalle Oil Co.'s No. 1 City Sewage farm, 150 ft. S of Rilling Road, 460 ft. W of NE cor. of tract in D. Bustillos Sur.	T.D. 75 ft.; dropped from report till work resumed.
Motes-Campbell's No. 2 Stumberg, 450 ft. from N line, 450 ft. from W line of S. Stumberg 140-ac. tract in F. Rolen Sur. No. 48	T.D. 597 ft.; no report.
George L. O'Neill's No. 1 Neimann in Juan Montes Sur. No. 6	T.D. 815 ft.; coring.

(Continued on Page 61)

Second Well in Ogemaw County, Mich., Pool; State's Potential Up to 80,000 Bbls. Daily

By PAUL A. ELLIOTT
Staff Correspondent, Michigan Fields

MUSKEGON, Mich., Oct. 30.—Oil was struck in commercial quantities this week in a second well in the new Ogemaw County Pool, 60 miles north of the Mount Pleasant area where the next big play in Michigan is anticipated.

Although not as important as several other tests now in progress in two townships, Alvin Webber's No. 2 Wilcox, NW NE NE Section 34-22n-2e, West Branch Township, was reported to have struck oil in the upper Traverse formation several feet higher than in No. 1 Wilcox on the same lease, the discovery well of the new pool. It made a flow of 20 bbls. after being drilled only 4 feet into the Traverse limestone and was shut down for later deepening.

The indicated success of No. 2 Wilcox has turned the attention of Michigan operators to Ogemaw County where a third well, C. A. Perry's Wobig heirs, SW SW NE Section 6-21n-3e, Mills Township, is nearing completion in the upper Traverse. This well will indicate more than No. 2 Wilcox as to the possible extent of the Ogemaw Pool. Four others are drilling or driving pipe while as many more are spudding or moving in.

Sun's Well Runs Wild

No little excitement was caused when Sun Oil Co.'s No. 3 J. L. Miller, SW SE SW Section 16-13n-1w, Porter Township, Midland County, came in with an estimated initial of between 4,500 and 5,000 bbls. a day in the Dundee, blew off the casinghead and ran wild until the cable was cut, the tools left in the hole and the master gate valve closed.

No. 3 Miller filled all available storage space at the rate of 200 bbls. an hour before the casinghead blew off and oil sprayed over a wide territory around the rig endangering other nearby properties. No. 3 Miller was the largest of seven new oil producers which added more than 5,000 bbls. of new initial to Michigan's potential.

A new schedule of proration is anticipated early in November as a result of increases which have boosted the State's daily potential to about 80,000 bbls. a day, presenting a more difficult situation than has been faced at any time since the State's allowable of 30,000 bbls. a day was announced by Secretary Ickes. Umpires O. H. White and A. J. Weideman completed potential gauges Saturday on all new wells completed during the last 15 days preparatory to computing new proration figures.

Since the order setting an exemption of 100 bbls. a day and a flat production of 30 per cent above that, about 20,000 bbls. of new net production has been added, increasing the potential from merely double the State's allowable, or 60,000 bbls. to nearly triple at 80,000 bbls. The decline of old production has been scarcely 5,000 bbls. The increased production has come principally in Porter Township, Midland County, where this week five of seven new oil wells added more than 4,900 bbls. of the 5,000 bbls. of new initial.

In addtiion to the Sun Oil Co.'s No. 3 J. L. Miller, which was a surprisingly large producer because of other smaller wells on the same lease and adjoining leases, four small wells were completed in the Dundee pay sands: Sun Oil Co.'s No. 2 J. L. Miller, NE SE SW Section 16, 150 bbls.; Gordon Oil Co.'s No. 1 W. Diebel, SE SE NW Section 18, and Charles Smith's No. 2 Buschre, SE SW NE Section 22, each 125 bbls.; and W. J. Wilson, trustee's No. 1 Hattie M. Hodge, NE NW SW Section 18, 40 bbls.

Mammoth Petroleum Corp.'s No. 2 Joseph Verette, SW SE SE Section 23-16n-4w, Vernon Township, Isabella County, made only 60 bbls. initial. Mellon-Pollock Oil Co.'s No. 2 George S. House, NE NE NW Section 26, Vernon Township, struck oil at 3,717 feet in the Dundee pay sands, but had not been completed. Goll-Good Joint Venture's No. 4 Mumy, SW SE NE Section 3-14n-3w, Chippewa Township, Isabella County, where the first large wells in the Mount Pleasant Field were drilled four years ago, struck oil in the Dundee and indicated commercial production.

One new gasser was completed in R. D. Malcolm's No. 1 Cook, SW SW NE Section 2, Broomfield Township, Isabella County, with a daily potential of more than 3,000,000 feet in the Michigan series, extending this pool a mile northeast. One other test is drilling in Broomfield Township, J. E. Harding's No. 1 Todd, in Section 7, about a mile west of the proved field, while James M. Taggart and others, of Big Rapids, have started their third test in Mecosta County, No. 3 Robert S. Fish, C SE SE Section 4-14n-9w. Their No. 1, the discovery well, was on the Barton lease, in Section 11, Austin Township, and No. 2 on the Fish lease in Section 10, Austin Township, half a mile northwest of the discovery well.

Fred Turner's No. 1 Hock, in Section 21, Porter Township, brought in two weeks ago making about 200 bbls., will be treated with acid. W. J. Sovereign's No. 1 Ann Arbor Railroad in Section 22, Vernon Township, also will be treated after disappointingly small production. Equipment has been moved in to start W. T. McKenna's No. 1 Rust, a wildcat in Section 2 of Thomaston Township, Saginaw County.

Four new permits increase the State's total to 355. Two were for wildcat locations and two for proven fields. The former include Thompson Brothers, Inc.'s No. 1 Grover Zettle, NE NE SW Section 13-22n-13, Ogemaw Township, Ogemaw County, and Lawson Oil & Gas, Inc., trustee's No. 1 P. W. Atkinson, C E half NE Section 26-14n-1e, Lincoln Township, Midland County. The others are Fred W. Turner and others' No. 2 J. Mahar, C SE NE Section 26-16n-4w, Vernon Township, Isabella County, and James W. Campbell and Vere Nunn, trustees' No. 1 H. W. Forney heirs, NE SW SE Section 18-13n-1w, Porter Township, Midland County.

Seneca and Wyandot Counties Are Active; Stark County Is Busiest in Central Ohio

By GEORGE A. WHITNEY
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Oct. 30.—In the old Lima Field of northwestern Ohio, the Wyandot and Seneca County areas are doing the bulk of the new work at this time. In Seneca County, the Tiffin Field, four wells were completed, all gas producers. In Liberty Township, Mrs. L. E. Harpster's No. 4, on the Nichols Weber farm, Section 34, is an average gas producer for that shallow territory. Tiffin Industrial Gas Co. is drilling No. 1 on the Charles H. Feasel farm, Section 32, same township. R. E. Greene is drilling No. 3 on the T. C. and B. G. Shaull farm, Section 30. J. H. Murphy & Son are drilling No. 1 on the Andrew Kimmitt farm, Section 20, also in Liberty Township. In Hopewell Township, Seneca County, Tiffin Industrial Gas Co.'s No. 1, on the A. Shumaker farm, and S. H. Curry's No. 1 on the Homer Dewald farm, Section 15, same township, are average gas wells. The latter company is drilling No. 2 on the same farm. In Pleasants Township, same county, J. H. Murphy & Sons have a fair gas well in No. 3 on the Clarence Fry farm, Section 6.

In Wyandot County the greatest amount of development work is under way. Upper Sandusky Oil & Gas Co.'s No. 5, on the O. J. Weiker farm, Section 29, Crane Township, reported an initial of 20 bbls. from the Trenton lime. Same company's No. 6, same farm, showed 20 bbls., the lightest producer found on the Weiker lease. Same company drilled in a nice gas well in No. 2 on the Mary Loverick farm, Section 29, same township. Measa Oil Co. is drilling No. 2 on the Mary Sampson farm, Section 20, Crane Township.

In Wood County, D. J. Bonawit has abandoned Nos. 1, 2, 3, and 4 on the C. E. Baker farm, Section 35, Montgomery Township. R. M. Bell and others' No. 1, on the G. S. Baker farm, Section 1, Troy Township, may be drilled deeper in the Lime formation.

In Sandusky County, Zorn-Hornung Co., of Gibsonburg, abandoned No. 5 on the John Noss farm, Section 20, Washington Township. In Jackson Township, same county, Ohio Oil Co. abandoned Nos. 1 and 2 on the J. Wagner farm, Section 6, and North Lima Oil Co. abandoned No. 3 on the Charles A. Gebel farm, same section.

Ottawa County

In Ottawa County, Gust Smith abandoned his No. 2 on the Billings farm, Section 8, Allen Township. In Section 16, Harris Township same county, not far from Elmore, Haubert & Hummell abandoned Nos. 1 and 3 on the George Manahan farm.

Word comes from Morenci, along the Ohio-Michigan line, that a gas well drilled on the Howard Fluck farm, showed 300,000 feet, and if the well shows staying qualities further development will be made and if sufficient gas is found it will be piped to Morenci and some of the hamlets along the state line.

In Henry Township, Wood County, J. T. Montgomery abandoned Nos. 8, 9, 21, 22, 24, and 26 on the Surety Oil Co.'s lease, Section 15. Agneta Chidester, Baldwin and others abandoned No. 2 Jacob J. Sommers farm, Section 4, same township, and Ohio Oil Co. abandoned No. 17 on the J. W. Sharp farm, Section 15, same township.

In Lucas County, Dillon, McFredericks and others abandoned Nos. 1 and 2 on the H. L. and A. Galbraith farm, Section 29, Monclova Township.

CENTRAL OHIO

Only five completions were reported from the Central Ohio Field, one being an oil producer and four were gas wells. In Medina County, D. A. Lake's No. 7, on the P. and A. Weaver farm, in Lot 1, Litchfield Township, is reported with an initial of 20 bbls., at less than 350 feet.

Stark County, the busiest spot in the Central Ohio Field, accounted for two new wells, with 34 drilling and a number of locations made. Plain Natural Gas & Heating Co.'s No. 1, on the Levi A. Stoner farm, Section 20, Plain Township, is a gas well from 4,530-47 feet. East Ohio Gas Co.'s No. 1, on the Mary Marquardt farm, Section 8, same township, is a gas well from 4,513-36 feet. East Ohio Gas Co. is drilling below 3,300 feet in No. 3 John Wyles farm, Section 13, Jackson Township, same county, and spudding in No. 1 on the H. and R. Konen farm, Section 22, same township. Brendel Producing Co. is drilling around 3,300 feet in No. 1 on the H. L. Shriver farm, Section 10, same township; around 2,900 feet in No. 2 on the Henry Huthmacher farm, Section 11, and around 3,100 feet in No. 1 on the Cora L. Clay farm, Section 21, same township. Fulton Oil & Gas Co. is close to 4,000 feet in No. 1 on the Jacob Schworn farm, Section 27, same township.

In Plain Township, Stark County, Brendel Producing Co. is drilling below 4,450 feet in No. 1 on the Elm Wood Park grounds, Section 14; No. 1 on the L. and E. Fritz farm, Section 10, is below 3,300 feet; No. 1 on the Peter C. Graber farm, Section 12, below 4,400 feet; No. 1 on the J. S. Unger farm, Section 17, below 4,100 feet; No. 1 C. L. Wood farm, Section 9, below 1,600 feet. Same company is spudding No. 1 on the William H. Miller farm, Section 4, same township, is spudding No. 1 on the Benjamine Christman farm, Section 5, and has rig under way for No. 1 on the Enos R. Methis farm, Section 8, same township. Same company is drilling below 3,400 feet on the W. J. Lynn farm, Lot 50, Deerfield Township, Portage County, a purely wildcat test.

Cable & Campbell are shut down with engine trouble on the Levi A. Stoner farm, Section 20, Plain Township, Stark County, at 3,400 feet.

Wittmer Oil & Gas Co. has a rig on the Minnie E. Simmons farm, Section 14, Lawrence Township, Stark County. Peiffer and others are drilling at 3,500

feet in No. 1 on the J. H. Schneider farm, Section 17, Plain Township. Boettler and others are drilling below 3,500 feet in No. 1 Peter Henry farm, Section 19, same township. Fulton Oil & Gas Co. is drilling below 3,000 feet in No. 1 on the Grace B. Steele farm, Section 20, same township. H. W. Hoover is drilling around 2,900 feet on his farm, Section 21, Plain Township, same county.

In Guernsey County, George McLaughlin's test on the C. F. and C. McMamara farm, Section 11, Adams County, is a gas well in the Berea sand from 1,195-1,235 feet. Preston Oil Co. made location for No. 6-1,531 on the J. O. Alloway farm, Section 10.

In Belmont County, M. J. Purdy and others have a rig for No. 4 on the Rosalia Johnson farm, Section 27, Somerset Township. Ohio Fuel Gas Co. has a location for No. 2 on the John A. Vogt farm, Section 32, same township. In Warren Township, same county, Robert Lewis and others have a rig for No. 3 on the C. F. Finch farm, Section 28, a rig for No. 3 on the J. House farm, Section 32. A. C. Peters and others are drilling close to 600 feet in No. 5 on the Rosalin Johnson farm, in Section 27. A. C. Peters and others are drilling No. 1 on the Anthony J. Burkhart farm, in Section 26, Somerset Township, at 1,850 feet.

In Tuscarawas County, J. H. Harper is drilling around 600 feet on the Oscar Nohler farm, Section 22, Jefferson Township. Frey and others are around 1,500 feet on the William G. Notz farm, Section 3, Fairfield Township, same county.

In Fairfield County, the City Natural Gas Works is drilling below 2,000 feet in No. 5 on the Cyrus B. Ricketts farm, Section 12, Berne Township, and around 1,900 feet in No. 1 on the James Keister farm, in Section 8, Pleasants Township, same county.

In Athens County, C. W. Nuzum is drilling No. 1 on the Pioneer City Building & Loan Co.'s property, Section 13, Berne Township. Ohio Fuel Gas Co. is drilling No. 13 on the Black Diamond Co.'s property, Section 17, same township. Gibson and others are drilling No. 9 on the Lenore Rice Williams farm, Section 23, Rome Township, same county. Stewart & Ross set casing on the Joseph Weiland farm, in fractional Section 7, Cannan Township, same county, at 1,320 feet.

INDIANA

Five excellent wells were reported from the Indiana fields, one a large oil producer and four gas wells. The oil well was Siosi Oil Corp.'s No. 21 well, 990 feet from the north line and 330 feet from the west line of the William Riggs farm, NW SW Section 32, Prairie Creek Township, Vigo County, with an initial production of 120 bbls. from a total depth of 2,207 feet. Pierson, Yeager and others are shut down at 2,306 feet in No. 1 on the J. R. Wilson farm, Section 8, same township.

In Gibson County, Knox Engineering Corp. reports 14,000,000 feet of gas in its No. 3 on the G. C. Sampley farm, NW Section 23, Columbia Township, from 1,456-58 feet. Same company's No. 2 well, in the southeast corner of the Russell Farmer's farm, SE Section 22, same township, has 800,000 feet of gas from 1,450-53 feet. Same company is drilling No. 3 on the E. F. and L. W. Gudgel farm, SE Section 22. Wabash Public Service Corp. is drilling around 1,610 feet. Big Four Oil & Gas Co. is drilling No. 2 on the Elmer Hunt farm, Section 19, Washington Township, same county.

In Pike County, Harry N. Bell's test, 850 feet from the south line and 280 feet from the east line of the J. and C. Shea farm, Section 19, same township, shows 800,000 feet of gas, from 1,172-80 feet. Same party is drilling No. 2 on the Charles Lucas farm, Section 18, and Claude E. Noble and others are drilling No. 3 on the Helen Smith farm, same section. In Logan Township, Wiser Oil Co. abandoned Nos. 2 and 3 on the E. G. Wilson farm, SW Section 13. Fred Veck and others are drilling No. 6 on the Craig heirs' farm, NW Section 17, Washington Township, same county.

ILLINOIS

In the Illinois Field, in Wabash Township, Wabash County, Ohio Oil Co. abandoned Nos. 1 and 4 on the W. J. Shick farm, SE Section 5. J. S. Young and others abandoned No. 2 on the J. G. Trimble farm, NE Section 2. Mount Carmel Oil Co. abandoned No. 10 on the F. M. Leek farm, SW Section 1, same township, and in Friendsville Township, same county, Wood Oil Co. abandoned No. 2 on the J. O. Wood farm, SE Section 19.

In Bond County, Jesse Ashby is drilling on the William File farm, Section 23, Old Ripley Township. Alspaugh, Ashby and others are reported shut down at 624 feet in No. 1 on the Martha E. File farm, Section 22, same township.

KENTUCKY

Imperial Oil & Gas Products Co.'s No. 1 well, on the Henderson Savings Bank property, in the Niagara Field of Henderson County, came in a dry hole. Same company is drilling No. 17 on the Aaron Freeman farm, in the same area.

In the Greenville Field of Muhlenberg County, Mayer Oil Co. is drilling No. 14 on the R. O. Kennedy 45-acre farm. H. K. Oil Co. is drilling No. 1 on the C. V. Boggess farm, and Ellis & Young are drilling No. 1 on the Jeff Wells farm, same field.

Lost Run Has 45 Barrel an Hour Well; Good Washington County, Pa. Gasser

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Oct. 30. — Two wells were features in the lower eastern fields during the past week, one a good producer in Lost Run Pool, Clay district, Ritchie County, West Virginia, and the other a gas well in Southwest Pennsylvania. The remainder of the completions were few, the total for the week being five gas wells, one producer and one dry hole.

In the Lost Run Pool in Ritchie County, the Richards Farm Oil Co. completed No. 4 on the Frank R. Ball farm in the Injun sand and, as soon as the sand was tapped, the well began flowing at the rate of 45 bbls. an hour. It produced over 1,000 bbls. the first day. The two offsetting leases, the Ball and the Boehm & Strickler, appear to be in the heart of the greatest production.

Drilling in that pool at present, the Boehm & Strickler Oil Co. is on top of the Injun sand in No. 5 on the Boehm & Strickler farm. The Richards Farm Oil Co. is drilling at 400 feet in No. 5 on the Frank R. Ball farm. Smith and Hendershot have reached 1,200 feet in a second test on the Charles H. Frederick farm. Ralph Roberts and others are drilling at 1,300 feet on the Sada McGinnis farm. This test is the most northern in the pool and will either extend the limits to the northwest or give evidence of a turn to the west. The lower end of the pool is not being developed at present as the Hinton Farm Oil Co. and Lucky Strike Oil Co. are amply protected by leases.

The other feature of the week was a test by the Manufacturers Light & Heat Co. on the Lucy I. Craft farm in Amwell Township, Washington County, Southwest Pennsylvania. It was drilled to 2,780 feet and at that depth is a gas well gauging nearly 5,000,000 feet a day. In the Fifty-foot sand at 2,652 feet there was a show of gas gauging 150,000 feet a day with about seven bailers of oil a day. In the Nineveh Thirty-foot sand the top of which was found at 2,747 feet, the upper gas pay was struck at 2,770 feet and gauged 600,000 feet a day. The lower pay was struck at 2,780 feet and with the heavy gas volume, drilling was stopped.

This test on the Craft farm is west of the Fifth sand oil streak which started drilling in this township, and had been drilled in expectation of gas in the Thirty-foot sand as tests of the Fifth sand west of a defined line had proved small producers or only an oil showing.

WEST VIRGINIA

No additional producers were reported in West Virginia during the week, and completions consisted of two gas wells and one dry hole. In Doddridge County the Columbian Carbon Co. completed No. 19 on the Lewis Maxwell lease the Mountain State Carbon Co. lease, in West Union district. It was drilled in the Gordon sand at 2,372 feet and is rated 250,000 feet a day.

In Kanawha County, Godfrey L. Cabot plugged back his No. 41 on the A. H. Huntington lease in Cabin Creek district from a total depth of 2,356 feet, the Berea sand, to the Salt sand at 1,597 feet where there was a fair volume of gas. It had been reported as dry in the Berea.

In Tyler County the Ohio Oil & Gas Co. drilled a test on the Lizzie Smith farm, mapped as the C. W. Smith farm, in Meade district, through the Salt sand to a depth of 1,600 feet. It proved a dry hole.

Drilling in West Virginia

In Kanawha County the Valley Gas Co. has part of the material on the lease on the George W. Harless farm in Elk district. In Poca district, Ward Gas Co. has made a location on the D. W. Hunt farm.

In Cabell County the West Virginia Gas Corp. is spudding on the Millie Ferguson farm in McComas district. In this district three other tests are drilling. The same company is down 2,903 feet, about on top of the shale, on the H. L. Day farm. Empire State Gas Co. has reached 250 feet in starting its test on the Kenneth Adkins farm. Ora Ann Gas Co. is down for casing at 1,425 feet on the George H. Midkiff farm. In Guyandotte district, three wells are drilling. Martin and Swanson are down 1,725 feet on the Humphrey farm. R. H. Adkins and others are drilling at 950 feet in a second test on the E. H. Darnell and others lease. H. H. Baker Gas Co. shut down at 925 feet on the J. M. Lewis farm.

In Calhoun County, the South Eastern Gas Co. has started drilling No. 3 on the John Slider farm in Lee district. In this district, F. F. McIntosh is down 1,730 feet in No. 4 on the S. A. Hays farm. In Washington district, Grant Fowler is spudding on the B. Hopkins farm, and C. B. Lewis is drilling at 360 feet on the Mary Fleming farm. In Sherman district, F. F. McIntosh has rigged up for a second test on the O. S. Bennett farm. Creed Barker and others are drilling at 2,030 feet on the Manfield C. Haught farm. Carnegie Natural Gas Co. has reached 1,000 feet in its No. 1,483 on the R. F. Bennett farm. In Center district, no wells are drilling. In Sheridan district, Poling and Mollahan are spudding in for a second test on the F. M. White farm. Cain and Rothwell are rigging up for a second test on the Lee Roy Jones farm. M. F. Crawley has reached 1,775 feet in drilling deeper his No. 1 on the L. E. Hughes farm.

Gilmer County is more active. Interest has been turned to the recent completion of the Hope Construction & Refining Co. which is making a fair oil showing in the Berea sand at 2,387 feet on the Mary A. Stump farm. This well was drilled deeper from the Maxon sand to the Berea sand where there appears to be about 85 bbls. a day production. In this vicinity Clint McCall and others are moving in to drill to the Berea sand on the J. M. Taggart farm of 10 acres. Others are inspecting their shallower wells in the district with a view to deepening. In DeKalb district, A. E. Ellis and others have part of the material on the ground for No. 3 on the Webster and Ware lease. McCall and others are down 1,640 feet in a second test on the Lee Gainer farm. Harley Satterfield and others have reached 1,055 feet on the Ross Ellyson farm.

In Roane County, on Buffalo Creek in Curtis district, W. B. Heeter is rigging up on the Maude Knopp and others' lease. On Laurel Creek of Henrys Fork in Spencer district, D. S. Fisher and others have a rig standing for a second test on the Stella V. Knotts farm. George E. Smith has made a location on the L. A. Short farm.

In Doddridge County the Philadelphia Oil Co. has a rig standing for No. 6 on the J. C. Coulehan farm in West Union Township. In this Township Columbian Carbon Co. has a rig standing for No. 20 on the Lewis Maxwell Mountain State Carbon Co. lease.

In Pleasants County, M. C. Martin is drilling at 200 feet on the R. G. W. Campbell farm in Jefferson district. In Wirt County, R. C. Wagner has a rig standing on the M. Richter heirs farm.

In Ritchie County, Egan and others are starting to drill on the A. C. Scaddon farm in Grant district. In this district, Big Four Oil Co. is down 100 feet on the D. C. Newbrough farm. In Murphy district, R. C. Jackson and others have a rig standing on the D. Givens farm and A. H. Jackson is down 1,640 feet on the J. W. Heffner farm. W. A. Bickerstaff has started drilling on the Hiram Williams heirs farm and is down 100 feet. F. S. Deem and others have started drilling on the Mary and John Border farm, same district. Ira Roberts and others have made a location on the W. T. Baker farm.

SOUTHWEST PENNSYLVANIA

In addition to the one fair gas well reported, there was one other gas well and several reports from wells which bad been drilled deeper. In Washington County, Hallam and Lewis and others drilled their test on the H. D. Ely farm in East Findley Township to a total depth of 3,040 feet, the Fourth sand. This proved dry and there was no Fifth sand at all. The hole is being plugged back, shutting off the water in the Gordon sand, to the Fifty-foot sand where there was about 100,000 feet a day.

In Greene County Meadow Run Oil & Gas Co. reached the Injun sand on the Louis Vance farm in Dunkard Township. The hole filled up with oil 1,400 feet in a 6-inch casing in 40 hours. The Pittsburgh Coal was at 536 feet. In this township, Convex Glass Co. is plugging its test, reported as dry in the Speechley sand, back to 1,500 feet. There was a showing of gas at 1,397 feet and again at 1,487 feet but it will make a light gas well from both stratas.

Manufacturers Light & Heat Co. drilled its well on the Elisabeth Lemley farm in Greene County deeper to 1,985 feet. The top of the Big Injun sand was at 1,798 feet. Gas was struck at 1,884-87 feet and again at 1,890-93 feet. It registered over 1,000,000 feet a day and is down to about 600,000 feet which was turned into the lines.

In Richhill Township, Greene County, Richhill Oil & Gas Co. is down 700 feet on the F. W. Baldwin farm. The Pittsburgh Coal depth was 525 feet. In Center Township, J. B. Orndoff has a rig standing on the W. H. Scott farm.

In Washington County, E. H. and J. B. Tague are drilling their No. 7 on the Adaline D. McKennan estate in South Franklin Township and have reached 100 feet. In West Bethlehem Township, the Naomi Oil & Gas Co. is down 3,700 feet on the E. E. Daniels farm. In this township, Ellwood Oil & Gas Co. is drilling at 1,641 feet on the Lee Mansfield farm.

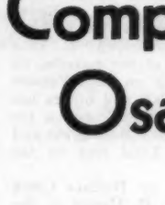
In Fayette County, Carnegie Natural Gas Co. is drilling at about 840 feet on the C. B. Wilkey farm in Jefferson

(Continued on Page 58)

Completions in Jal Pool and Rattlesnake Field; Osage Operators Want Gravity Basis Price

By TOLBERT R. INGRAM
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Oct. 30.—Continental Oil Co.'s No. 2 McCallister A-24, in the Jal Pool in New Mexico, flowed 20 bbls. per hour while tubing was being run, and Western-Anton's No. 1 Conditt had a gas blowout while drilling cement plug. An unconfirmed report says a gas strike was made at 180 feet in a wildcat near Las Vegas. Continental Oil Co. had a 50-bbl. completion in the Rattlesnake Field in San Juan County.



The Ramsey well in northeastern Colorado is drilling out 1,000 feet of cement inside the pipe before attempting a test of the Muddy sand. Show of gas in the Mornpas sand on the Craig Dome in Moffat County was increased very little by a shot in Rocky Mountain Gas Co.'s No. 1 Eberle. There were no completions or new locations in Colorado.

Chadron-Osage Oil Co.'s No. 21, in the Osage Field in Weston County, Wyoming, was completed for 50 bbls. on the pump. Osage operators have asked to have the price of crude in that field put on a gravity basis in line with Salt Creek.

Snowstorm delayed operation in the Cut Bank Field in Montana and no wells were completed. Only one new location was reported. One small gas well was completed in the Kevin-Sunburst Field.

NEW MEXICO

Lea County

Continental Oil Co. has promise of a good well in the Jal Pool in its No. 2 McCallister A-24, NW NE NE Section 24-26-36, which flowed 20 bbls. per hour from a total depth of 3,236 feet while tubing was being run. It is bottomed in soft lime. It is in the southwestern part of the field and an offset on the south to Stanolind Oil & Gas Co.'s No. 34 C. Farnsworth, which was completed by Midwest Refining Co. in July, 1930, for 675 bbls. initial at 3,235 feet.

Western-Anton's No. 1 Conditt, C SW SW Section 12-25-36, which is half a mile north and south of the nearest producers, has been trying to test at 3,349 feet, total depth. The 6⅝-inch was cemented at 3,280 feet with 125 sacks, and while drilling the plug, the gas blew out between the 6 and 8-inch. It is probable it will be recemented. Humble Oil & Refining Co.'s No. 3-A Lindley, C NW SW Section 13-25-36, is building rig and rigging up.

Shell Petroleum Corp.'s No. 3 Grimes, SW NE SW Section 28-18-38, Hobbs Pool, is drilling at 3,100 feet in anhydrite.

Eddy County

Western Drilling Co.'s No. 2-A Green, C SW NE Section 29-17-29, Jackson area, is drilling at 2,459 feet in lime, and Harry Leonard's No. 9 State, SE cor. NW Section 22-17-29, is setting 8¼-inch casing at 2,157 feet, in lime. C. H. Lockhart and others' No. 2 Root, C SW SW Section 7-17-30, Majamar area, is drilling at 3,167 feet.

Ralph Spearow and others' No. 1 McClellan, SW NW NE Section 22-22-23, Indian Creek district in western Eddy County, has resumed and is making hole in black lime at 4,063 feet.

Stovall & Marshall's No. 1 Mock, C SE SE Section 29-24-27, Black River district, is drilling at 310 feet in anhydrite.

R. D. Compton Oil Co.'s No. 6 State, SW NE SW Section 15-16-23, upper Cottonwood district, is drilling at 525 feet, and E. B. Guest and others' No. 1 Pierson & Watson, NE cor. NW Section 8-16-25, a sulphur test, is shut down at 610 feet after setting the 8¼-inch.

San Miguel County

A report of a gas strike on the Las Vegas structure, yet unconfirmed, has been received from several sources. This is an operation, not heretofore reported, by Starr-Kennedy Oil Co., about 1,500 feet to the northeast of H. E. Hoover's No. 1 Sanjuijusla, NE cor. SE Section 18-17-17, which was abandoned at 3,073 feet in 1929. This puts the new operation approximately in the SE SE Section 17-17-17. The report is to the effect that a considerable flow of gas was encountered at 180 feet and that boiler was moved back. The total depth of the hole is reported to be 195 feet with a fishing job on hand. Starr Oil Co., subsequently Starr-Kennedy Oil Co.'s No. 3 Adams, NE cor. Section 25-17-16, Graham Dome, which reached a depth of 5,095 feet in 1930, when it was tied up by a fishing job, has been working for several months and has succeeded in sidetracking 700 feet of 5⅞-inch pipe and to be underreaming new hole to run pipe.

Cabra Springs Oil & Gas Co.'s No. 1, C NE NE Section 22-12-22, Pino Mesa, is underreaming to set the 10-inch at 1,400 feet.

Santa Fe County

Elmer Fisher's No. 1 Hill, Section 6-10-7e, Barton district, is reported drilling at 850 feet in hard white lime and to have had several shows of carbon dioxide gas.

San Juan County

Continental Oil Co.'s No. 32, SE NE Section 2-29-19, Rattlesnake Dome, was completed for 50 bbls. at 740 feet, in the Dakota. Governador Oil Co.'s No. 1 Likens, SW NE SW Section 12-29-9w, Blanco district, is shut down at 2,357 feet with tools lost below the liner. R. C. Oswell's No. 4, SW NW NW Section 34-30-11w, Aztec district, is drilling at 950 feet and carrying 8¼-inch, and McCoy & Phillips' No. 1 Martin, NE SE NW Section 34-30-11w, is drilling at 700 feet. Albert Evans' No. 1, NW cor. NE Section 34-30-11, is a location, to be drilled as soon as the McCoy & Phillips well is completed. Meier & Culberson's No. 1, S NE Section 32-30-11, is drilling at 542 feet, and Fred Barrett's No. 1 Hart, SW NW SW Section 11-29-11, is shut down for pipe at 1,440 feet.

COLORADO

Weld County

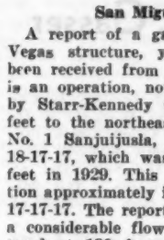
The Ramsey Petroleum Corp.'s No. 1 Scriven, C NW Section 22-7n-59, Buck-

(Continued on Next Page)

Unexpected Gas Flow in Turner Valley Well Brings Potential Up to 10,000,000 Feet

By VICTOR LAURISTON
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Oct. 28.—In the Mar-Jon area, South Turner Valley, Becker Syndicate's No. 2 Anaconda, LSD 15, Section 28-18-2w5, has struck an unexpected gas flow beneath a hard band in the Dalhousie sand. The gas was struck a little below 4,700 feet and is estimated between 4,000,000 and 5,000,000 feet a day, bringing the total potential up to about 10,000,000 feet. The test is deepening below 4,750 feet with a gradual increase in production.



Farther south and west in the same section, Pacalta Oils' No. 1, LSD 7, encountered a stray oil sand in the lower Benton at 2,885 feet. The sand was about 2 feet thick and yielded about 1 bailer an hour. Drilling is continuing below 3,100 feet after entering the Blairmore formation at 2,940 feet. While the Benton show was noncommercial, it is regarded as indicating new shallow crude possibilities in acreage to the southwest of the proven field. There was very little gas with the oil.

In the same section, Public Oil & Gas Co.'s No. 1, LSD 8, is redrilling below 1,000 feet, after running into a crooked hole. Spooner Oils' No. 5 Anaconda, LSD 1, is drilling below 535 feet. British Dominion Oil & Development Corp. is completing details of its acreage contract and dismantling rig in the central field for removal to location for its No. 4 test in LSD 6, Section 28-18-2w5. Marjon Oil Co.'s No. 2 Kinderaley, LSD 10, is drilling below 3,600 feet. Sunburst-Mid Royal's No. 1, LSD 14, is drilling below 1,640 feet.

North of these tests, Sterling Royalties' No. 1, LSD 1, Section 33-18-2w5, is drilling below 4,450 feet in a very hard formation. Livingston Syndicate's No. 1, LSD 5, Section 34-18-2w5, is standing at 2,865 feet after cementing 13⅜-inch casing.

Mercury Tract

In the Mercury area, Associated Royalties' No. 1 Spray, LSD 9, Section 5-19-2w5, is reported drilling below 3,485 feet with casing carried down close behind the tools.

New Tests for Foothills

In the southern Alberta foothills, British interests headed by E. H. Cunningham-Craig have spotted a test on the Quaich, a structure west of the Watson structure. Location is some miles west of Raven Oils' No. 1 on the Watson structure in Section 20-9-2w5. Drilling is not likely to be started till next spring. The Quaich is thought to be a fold separate from and to some extent paralleling the Watson structure.

Two tests have been located on the Watson structure, but neither carried to conclusive depth. Source Rock Petroleums' No. 1, LSD 13, Section 21-9-2w5, was spudded some years ago but has been standing at about 60 feet. Raven Oils' No. 1, Section 20-9-2w5, started about the same time, was taken over this summer by a Calgary syndicate headed by Dr. F. E. Sandercook. The test is deepening from 80 feet where 20-inch casing was cemented. Several gas flows were struck in this depth, interfering somewhat with drilling operations.

The Quaich structure was first investigated some years ago by Mr. Cunningham-Craig, who is responsible for its unusual name. The name signifies "cup" in reference to the depression in the foothills where the potential oil and gas area is located. Source Rock's No. 1, some miles east, started drilling in the Benton, which is the outcropping formation in the proven portion of the Turner Valley Field.

Tests in the Foothills

On the Moose Mountain structure west of Calgary, Graystone Consolidated's No. 2 Signal Hill, LSD 9, Section 34-23-5w5, is redrilling below 1,710 feet. West of Olds, Hunter Valley Oil Co.'s No. 1 McLaren, Township 31-10w5, is drilling below 2,435 feet after cementing casing.

Far South Tests

In the far south, Union Drilling Co.'s No. 1, LSD 8, Section 21-18-2w5, is drilling below 1,400 feet; Highwood-Sarcee's No. 1, NE same section, 1,100 feet; Hoffar-Lundy Syndicate's No. 1, LSD 13, Section 22-18-2w5, below 3,710 feet.

Central Turner Valley

In the Central Turner Valley, Okalta Oils' No. 4, LSD 8, Section 1-20-3w5, has had trouble with caving, and is reaming from 1,800 feet to carry casing to bottom at 2,200 feet.

North Turner Valley

In North Turner Valley, Model Oils' No. 2 Anaconda, LSD 16, Section 22-20-3w5, is producing 25 bbls. of 73.2 naphtha daily. The well was carried to 6,539 feet over 1,000 feet in the lime, and when the lower lime failed to develop additional production, a porous horizon at around 5,924 feet was shot and later given acid treatment. Tests are being made at various pressures from 600 to 900 pounds to determine the most satisfactory gas-oil ratio. The well is about one-half mile north of Model's No. 1, in LSD 8, which is a large and consistently steady producer of light crude.

Oil City Test

In the old Oil City Field, Waterton

Lakes Park, Oil City Royalties' No. 1 Patrick, Section 30-1-30w4, is drilling close to 1,400 feet. The test, close to the marginal discovery well drilled 30 years ago, was expected to get production within 1,100 feet, approximately the geological horizon where the discovery well got a flow of light crude; but nothing of importance was met at this depth. A shallow oil show had been met at 29 feet. The hole is in good shape for a deep test, and drilling is being continued.

Athabaska Drilling

In the Athabaska district, northern Alberta, Athadome Oils' No. 2, LSD 3, Section 15-66-23w4, is drilling below 2,500 feet, and approximately 275 feet in the limestone. Drilling in this formation has shown a number of porous horizons with oil saturation, one revealing continuous saturation for about 20 feet. None of these has been tested. Drilling will be continued as late as possible, though the outfit will likely shut down for the winter.

Test Duvernay Structure

The Duvernay structure north of Edmonton is to be given a further test by a syndicate backed by Wainwright and Edmonton capital. The location will be near Brosseau, north of the river from Alberta Pacific Consolidated's location in LSD 5, Section 34-55-12w4. Brosseau is in Section 35-55-12w4.

The Duvernay structure has interested oil operators for a number of years. Canadian Exploration Co., of Denver, through a subsidiary, the Frontier Development Co., drilled two shallow structure tests in Townships 55 and 56; while the first commercial test was Alberta Pacific Consolidated's No. 1, finished in 1930 at 2,417 feet. This test got numerous oil and gas shows, no less than six gas shows between 585 feet and 1,530 feet being reported, with eight oil shows ranging from 1,490 feet to 1,805 feet. Drilling started in the Belly River formation, the drill getting the top of the Lea Park-Colorado at around 150 feet, the lower Cretaceous at 1,500 feet and the top of the Paleozoic lime at 2,070 feet. This test was drilled under a joint arrangement between Alberta Pacific Consolidated Oils, Ltd., and Canadian Exploration Co.

The showings were so encouraging Frontier Development Co.'s No. 1 Two Hills test was started in Section 1-55-13w4, carried to 2,000 feet, getting further encouraging showings but no commercial production. Texas Oil Co. had a joint interest. Results of the two commercial tests have indicated several potential oil horizons.

British Columbia Drilling

In the Sage Creek district, southeastern British Columbia, Columbia Oils' No. 1 is reported drilling below 1,020 feet with 12½-inch casing at 1,000 feet. Columbia's No. 2 is being drilled close to No. 1 to tap a shallow oil flow encountered in No. 1 at about 100 feet. This horizon had a flow of about 15 bbls. of 50 gravity crude, which had to be cased off.

Saskatchewan Gas Test

In southern Saskatchewan, Highwood-Sarcee Oils' No. 2, LSD 8, Section 23-12-24w2, on the Dirt Hills structure, is drilling below 1,871 feet. This test is being drilled through Pine Hill Petroleum, Ltd., a subsidiary controlled by Highwood-Sarcee Oils, Ltd. The area, about 50 miles southeast of Moose Jaw and a similar distance southwest of Regina, has been reported on by Fred W. Shelton, T. B. Romie of the Texas-Pacific company, S. E. Slipper of the Canadian Western Natural Gas Co., Dr. Robin Willis and others, and the test was preceded by geophysical investigations. Gas shows have been reported at 700 feet, 1,385 feet and 1,625 feet, and another potential gas horizon is looked for around 2,200 feet. The structure is a closed anticline, and the lime is looked for around 3,800 feet. A. W. Dingman is president of Pine Hills Petroleum, Ltd., and the officers are officers of the parent company.

Assets of the Oxville Oil, Gas & Development Co. of Saskatchewan were sold by the sheriff on September 21, and will, it is understood, be utilized in connection with a new test to be drilled by Lloydminster Gas Co. in the vicinity of Lloydminster, Saskatchewan.

Drilling in Ontario

In the Dawn Field, Lambton County, Ontario, Union Gas Co.'s No. 67, Lot 24, Concession 9, Dawn Township, has finished at 2,025 feet with a production estimated 1,250,000 feet a day. The test got about 500,000 feet a day in the top sand, and delayed when the outfit was destroyed by lightning. A new rig was secured from Ekfrid, and the test deepened, getting close to 600,000 feet in the lower sand. A shot of 225 pounds in the lower horizon increased the flow 200,000 feet. Union's No. 68, SE SE, Lot 25, Concession 2, Dawn Township, is drilling below 600 feet. Union's No. 69, Lot 24, Concession 5, is reported spudding in.

Rocky Mountain Area

(Continued from Preceding Page)

ingham area, is cleaning out 1,000 feet of cement inside the pipe after running cement to set the 7-inch at 6,794 feet. Total depth is 6,814 feet. At this depth the hole was 14 feet in the Muddy sand, which contained shows of oil and gas.

Moffat County

Mountain Fuel Supply Co.'s No. 2 Florence Wilson, C NE NE Section 22-12-100, Hiawatha Dome, is plugging back from 7,577 feet, after testing the basal Mesa Verde sand, to 4,770 feet, where it will test a gas sand. Same company's No. 1 Wheeler, SE NW NW Section 30-12-100, is drilling at 1,863 feet in the top of a sand showing gas. Texas Co.'s No. 1 Van Schaick, SW cor. Section 19-12-100, is shut down at 191 feet.

The Rocky Mountain Gas Co.'s No. 1 Eberle, SE SW SE Section 9-6n-91, Craig Dome, shot the Morapas sand below 3,412 feet, which responded with only a small increase in the gas and the well is shut down for orders. Total depth is 3,830 feet.

Texas Co.'s No. 1 Iles Investment, SE NW Section 23-4n-92, Iles Dome, is standing at 3,447 feet, total depth, after cementing the 8⅝-inch at 3,422 feet. The pay zones in the Morrison were barren.

William A. Myers and others' No. 1 State, NW SW SW Section 16-4n-101, Skull Creek, is drilling at 3,353 feet.

Boulder County

Consolidated Smelting & Metals Co.'s No. 1 Blubaugh, SE cor. Section 20-3n-70, Lyons district, is bottomed at 1,100 feet and running 3-inch to shut off water and test a show of oil.

Fremont County

Cherry Creek Placer Co.'s No. 1 Lucas, SW cor. NE Section 32-18-69, Florence district, plugged back from 3,075 feet to oil streak at 2,220 feet.

Las Animas County

Mountain States Oil Corp.'s No. 1 Nikola, C NE SE Section 10-34-62, Garcia district, is shut down at 500 feet for rig repairs.

Park County

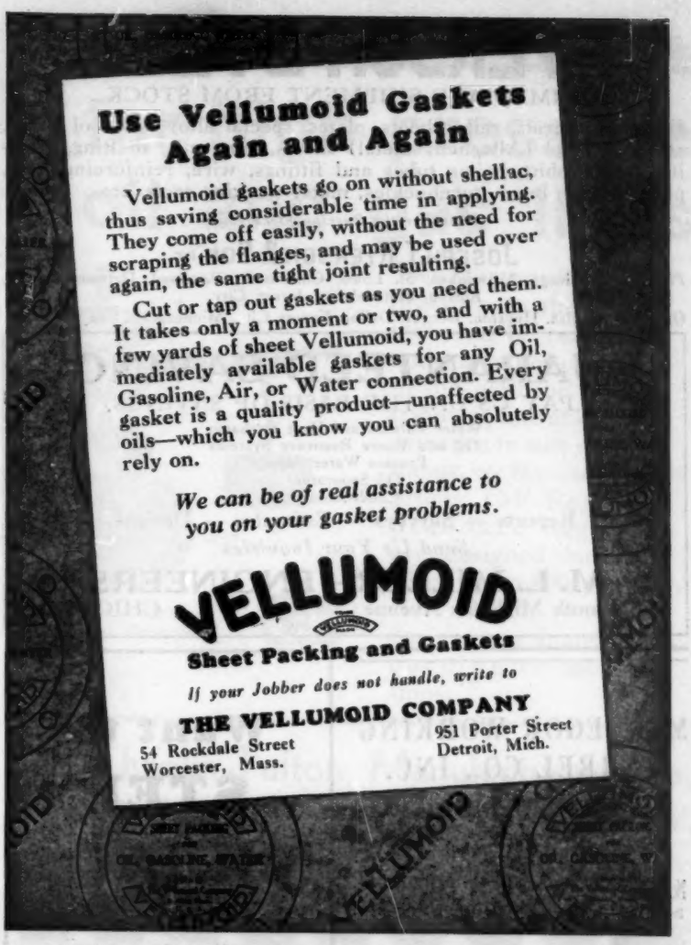
South Park Oil & Gas Co.'s No. 1 Esche, SE cor. NW Section 5-9s-76, Como district, is shut down at 2,465 feet, and South Park Oil Co.'s No. 1 Milligan, NE cor. SE Section 13-8s-76, Jefferson district, is drilling at 3,076 feet.

WYOMING

Weston County

Chadron-Osage Oil Co.'s No. 21, SW cor. Section 14-46-64, Osage Field, was completed for 50 bbls. per day on the pump from sand at 2,073-83 feet after a shot. Riggs Oil Co.'s No. 3, SE NE Section 16-46-64, is drilling at 3,000 feet, and Albert Jones' No. 5, SW NE Section 21-46-63, is shut down at 260 feet.

The Osage Oil Producers Association at a meeting on October 22 adopted a resolution asking for a change of the


Use Vellumoid Gaskets Again and Again
Vellumoid gaskets go on without shellac, thus saving considerable time in applying. They come off easily, without the need for scraping the flanges, and may be used over again, the same tight joint resulting.
Cut or tap out gaskets as you need them. It takes only a moment or two, and with a few yards of sheet Vellumoid, you have immediately available gaskets for any Oil, Gasoline, Air, or Water connection. Every gasket is a quality product—unaffected by oils—which you know you can absolutely rely on.
We can be of real assistance to you on your gasket problems.
VELLUMOID
Sheet Packing and Gaskets
If your Jobber does not handle, write to
THE VELLUMOID COMPANY
54 Rockdale Street Worcester, Mass.
951 Porter Street Detroit, Mich.

GRAVER

BUILT *and* ERECTED

The engineering department of GRAVER offers you expert service in modern economies of design and erection. We are equipped to build and erect field storage, refinery bulk plant, service station and truck tank equipment of steel plate construction with necessary fittings, either to your specifications or designed to your needs. GRAVER manufacturing and fabricating facilities are unexcelled, yet production costs are low. GRAVER experience and responsibility are long standing. GRAVER field erection is recognized for its good workmanship. Let GRAVER figure on your work.

GRAVER TANK & MFG. CORP.

General Sales Office: 332 South Michigan Avenue, Chicago.
General Offices and Factory: East Chicago, Indiana.
Representatives in Principal Cities.
Manufacturers and Erectors—Special Steel Plate Construction—Water Conditioning Equipment.

FIELD STORAGE *and* REFINERY EQUIPMENT

RYERSON STEEL

IMMEDIATE SHIPMENT FROM STOCK

Bars, structurals, rails, sheets, plates, special alloy and tool steels, stainless steel (Allegheny metal) sheets, bars, etc., shafting, welding rod, babbitt, boiler tubes and fittings, wire, reinforcing bars, pipe, copper, brass, turnbuckles, metal working tools, etc.

Write for the Ryerson Stock List.

JOSEPH T. RYERSON & SON Inc.

Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Cleveland, Detroit, Buffalo, Boston, Philadelphia, Jersey City.

Offices at: Tulsa, Houston, Denver, Dallas, Kansas City, Minneapolis, San Francisco.

GUARANTEED SAVINGS

PAY US ON THE BASIS OF SAVINGS

Water Balance and Heat Exchange
Oil and Waste Recovery Systems
Process Water Supply
Oil Separators
Conditioning

Reports — Surveys — Estimates — Designs

Send Us Your Inquiries

M. L. MILLER—ENGINEERS

310 South Michigan Avenue CHICAGO

McGREGOR WORKING BARREL CO., INC.

BRADFORD, PENN'A.

TESTIMONIAL

Sept. 9, 1933.

Dear Sir:

On Dec. 29, 1932 we installed one of your new improved working barrels on our state line lease well No. FH-4.

Since we installed this barrel it has run 24 hours per day since the above date and has given perfect service.

Yours very truly,

Petroleum Reclamation Co.

R. W. Weaver,
Pur. Agt.

We also manufacture other kinds of working barrels including McGregor Barrels and Standard Barrels. We manufacture all kinds of balls and seats which we guarantee to be as good or better than any on the market. If your dealer does not have the above, write us for prices and further information.

McGREGOR WORKING BARREL CO., INC.

BRADFORD, PENN'A.

Want to

STEP AHEAD?

Reading important oil books is the surest route to

SOLID SUCCESS

For a FREE list of such oil books just address the

Book Department

THE OIL AND GAS JOURNAL

Tulsa

SPERRY-SUN WELL SURVEYING CO.

1603 WALNUT STREET

PHILADELPHIA, PA.

DALLAS, TYLER AND HOUSTON, TEXAS, TULSA, OKLAHOMA AND LOS ANGELES, CALIFORNIA

SURWEL SYFO

UNDERGROUND WELL SURVEYING SERVICE

minimum price set by Administrator Ickes for Osage crude from $1.01 to a gravity basis ranging from $1.19 for 40 gravity downward 2 cents for each degree of lower gravity crude. This would put Osage in line with Salt Creek and Mid-Continent prices. It was also resolved to insist on an increased allocation for the field. The allowable was placed at 750 bbls. per day, based on pipe line runs, without taking into consideration almost as much again shipped out by truck.

Crook County

Dr. B. R. Kinter and others' No. 1 Rockford-Wyoming, NE SE Section 13-52-62, Rocky Ford district, is shut down at 370 feet for pipe.

Niobrara County

Interstate Oil & Refining Co.'s No. 1 Morrell, NW NE SE Section 2-39-61, West Mule Creek, a test to the Minnelusa sand of Pennsylvanian age, is reported to have encountered considerable gas at around 2,270 feet. The sand in the base of the Minnelusa which was productive in the Argo test on East Mule Creek, is expected at 2,371 feet. West Mule Creek is geologically higher than the other structure.

Converse County

Continental Oil Co.'s No. 30 Glenrock Sheep, SW SE SE Section 4-33-76, Big Muddy, is drilling by bailer at 4,210 feet.

Natrona County

Midway Oil Corp.'s No. 1 Boyer, SW NE NE Section 23-35-79, Midway Dome, is drilling at 4,500 feet.

Carbon County

Ohio Oil Co.'s No. 2 A. J. Hazlett, NE NE Section 34-23-79, Allen Lake, is drilling at 2,412 feet. Sand at 2,108-2,330 feet was tested through drill stem and showed for 9,000,000 feet of gas per day. It then cut a 3-foot shale break and entered the Sundance, in which there was an increase in gas.

Mutual Oil Syndicate's No. 9 Dutton Creek, NW NE Section 12-18-78, Dutton Creek, is drilling at 4,815 feet and will begin coring at 4,850 feet.

Earl W. Reeder, Inc.'s No. 1 Union Pacific, C SW SW Section 19-20-83, Overland Dome, is drilling at 3,000 feet. Producers & Refiners Corp.'s No. 4 Wertz, SW cor. SE Section 7-26-89, Wertz Dome, is preparing to rip the 6¼-inch at 2,970 feet. It is set at 3,365 feet and total depth is 3,541 feet. It has been tied up for some time with a fishing job.

Park County

Resolute Oil Co.'s No. 1 State, C NW SW Section 16-57-101, Badger Basin, is drilling below 3,090 feet. V. M. Kirk's No. 1 Government, SW cor. Section 24-58-98, Frannie Dome, is drilling at 2,138 feet.

MONTANA

Glacier County

Operations in the Cut Bank Field were hampered by a heavy snow which caused several wells to shut down on account of difficulty in moving in supplies. There were no completions.

Alberta-Pacific Consolidated Oil Co.'s No. 3 Matson, SW NW SW Section 14-34-6w, is shut down for rotary at 148 feet, and Commonwealth Petroleum Co.'s No. 1 Getty, C NE SW Section 15-34-6w, is spudding. Lon Crumley's No. 1 Billedeaux, NW SE Section 27-35-6w, is spudding at 300 feet, and W. M. Fulton and others' No. 2 Haggerty, C NW NW Section 15-34-6w, is preparing to spud. Hannah-Porter Co.'s No. 2 Britton, NW cor. SE Section 14-34-6w, is an abandoned location, and Montana Headlight Oil Co.'s No. 2 Williams, C NE NE Section 11-34-6w, has rig on location.

Montana Power Gas Co.'s No. 1 Haines, C SE Section 20-35-5w, is spudding at 125 feet, and its No. 1 Miller, SW NE NE Section 4-35-5w, is preparing to set the 6⅝-inch on top of the Darling sand at 2,795 feet, total depth. Same company's No. 1 Mary Seeba, NE cor. NW Section 2-34-6w, is ready to spud, and its No. 1 Teterud, W half, Section 2-35-5w, is drilling at 2,428 feet.

Nadeau Brothers' No. 1 Van de Mar, C SE NW Section 35-35-6w, is rigging up, and Nyhagen-Bell's No. 1 Anderson, SE NE SW Section 26-35-6w, is preparing to run the 6⅝-inch to carry at a total depth of 2,585 feet. Olive Oil Co.'s No. 1 Rosa Winkler, C E half, NW NW Section 35-35-6w, is a new location, waiting for rig from Haglund, Sr., No. 1. Par Oil Co.'s No. 2 Haines, SE cor. SW Section 2-34-6w, is drilling at 1,800 feet, and Santa Rita Oil & Gas Co.'s No. 3 Yunck, C SE SW Section 14-34-6w, has rig material on the ground.

R. C. Tarrant's No. 2 Britton, SW NW SE Section 14-34-6w, is drilling at 1,900 feet, and his No. 1 Carman, C NW NW Section 19-34-5w, is drilling at 2,170 feet. Tarrant's No. 2 Haglund, Sr., C NW NW Section 13-46-6w, is rigged and ready to spud, and his No. 4 Haglund, Jr., C SE SE Section 13-46-6w set the 15½-inch at 70 feet. Tarrant's No. 1 Larson, C SW NE Section 12-34-6w, is drilling at 2,630 feet, and his No. 2 Miller, C SW NE Section 24-34-6w, cemented the 10¾-inch at 519 feet. His No. 1 Winkler, C SW SW Section 23-35-6w, is drilling at 900 feet.

The Texas Co.'s No. 1 Haggerty, SE cor. Section 9-34-6w, is shut down at 148 feet on account of heavy snows, and its No. 1 Hinkle, NW cor. NE Section 2-34-6w, is drilling at 1,575 feet. Same company's No. 1 Yunck, NW SW Section 14-35-6w, suspended building rig on account of snow. L. R. Hannah and others' No. 1 Peterson, SW NW NW Section 29-32-4w, is shut down at 400 feet, and Texas Co.'s No. 1 State, C NE Section 16-32-5w, is bottomed at 208 feet and straightening hole at 75 feet.

Toole County

C. Leonard Smith and others' No. 1 Mowat, SW cor. SE Section 7-33-2e, East Shelby district, is shut down at 1,550 feet on account of the storm. It topped the Sunburst at 1,495 feet and set the 6⅝-inch at 1,500 feet. It began showing oil at 1,520 feet and the quantity has increased with depth. Showing is estimated at 25 bbls. At 1,180-85 feet it had 3,000,000 feet of gas.

Alberta Development Co.'s No. 3 Buckley, NE SE SW Section 1-37-4w, Border Field, is drilling at 2,400 feet.

Rocky Ridge Syndicate's No. 1, SE cor. NE Section 11-35-3w, Kevin-Sunburst Field, plugged back to 1,340 feet and completed as a gas well, making 450,000 feet with a pressure of 60 pounds.

Carbon County

Carbon Oil & Gas Co.'s No. 1 McMinn, NW SW SW Section 7-7s-22, Dry Creek, is cleaning out at 5,615 feet, total depth, after a shot to loosen bailer. It is showing some oil and gas and drilled 5 feet deeper before setting pipe.

Liberty County

Western Natural Gas Co.'s No. 1 Shaffer, SW cor. SE Section 14-37-4e, Whitlash district, is drilling at 1,400 feet.

SOUTH DAKOTA

Wytex Oil Co.'s No. 2 Hamilton, SE cor. NE Section 32-8n-1e, Butte County, is shut down at 1,703 (cor.) feet, waiting for fishing tools. Tools and drilling line were lost when caught by a cave. Weaver Oil Co.'s No. 1, NW cor. Section 32-3s-22, Jackson County, is drilling at 2,600 feet after passing through a 15-foot vein of coal.

WASHINGTON

Mutual Exploration Co.'s No. 1 Lacey, Section 11-26-13, Hoh River district, Jefferson County, was completed at around 800 feet. This was one of three core tests to work out the structure. Outfit has been moved to another location to work out location for No. 3 Gilkey. Hoh River Oil Co.'s No. 2 Gilkey, Section 12-26-14w, may be abandoned at 865 feet. At this depth it had a show of oil and a liner was run to stop caving and test, but loose sand and cavey ground made this impossible. Northwest Oil Re-

search Corp.'s No. 1-A Norco, NW Section 26-22-20, Chelan County, is drilling at 300 feet. First objective is expected at 2,300 feet.

OREGON

Clarno Basin Oil & Gas Co.'s No. 1 Antelope, Section 34-7-19, Wheeler County, is drilling at 3,200 feet in lime, and Steiwer Dome Development Co.'s No. 1, SW NW Section 14-9s-3w, Marion County, is changing from machine to standard cable tools at 910 feet and will underream the 10-inch to bottom.

Standardized Octane Value, Balanced Fuel Volatility, of Great Importance

By J. B. MACAULEY, JR.
Chrysler Corp.*

To the designing engineer the most important property which a motor fuel can possess is that of uniformity; and I believe that gasoline, the most important product of the petroleum industry, has been, until recently, one of the most loosely specified and the least uniform of its products. The automotive engineer can, and undoubtedly will, design engines to use any reasonable fuel, if he knows what the fuel will be. He cannot do a good job of design when the engine is required to use any one of a number of fuels, varying in vapor pressure from 6½ to 13 pounds per square inch (Reid), and in antiknock value from 49 to 80 octane.

The properties of gasoline which have caused most difficulties in the design and operation of automobiles can be roughly divided into two groups: what we might call the positive properties, i.e., those qualities which influence the design of the engine; and the negative properties, which concern impurities in the fuel that interfere with car operation from a service standpoint, but on which little can be accomplished from a design standpoint. The most important positive properties are antiknock value, volatility, and heat value. The most important of the negative properties are gum and sulphur. The sulphur problem has been pretty well solved, but the question of gum content still remains to plague us. There is considerable work to be done on gum, and there is very little of it that the designing engineer can do.

Antiknock Problem

The antiknock quality of gasoline is at the present time outstanding in the mind of the engine designer. After years of development a method of rating fuels for antiknock value has been developed and accepted by the automotive and petroleum industries, and approved by the American Society for Testing Materials, which rates gasolines in the laboratory in accord with their performance in the average car on the road. In other words, we have, at last, a yardstick for the measurement of antiknock quality of fuels. Further, in the past year there have been put on the market standard-price gasolines conforming to a uniform antiknock value such that the designer can, for the first time, really design his engine for fuels of a known antiknock efficiency without having to step into the premium-gasoline class. From the designer's standpoint this is one of the most important steps toward fuel uniformity which has ever been taken. The improved efficiency of modern automobile engines has rested principally on increases in compression ratio; and these have been made possible; first, by improvements in the fuel, and, second, by improvements in combustion-chamber design. It is quite apparent, however, that in order to design efficiently the engineer must have some fuel of definite antiknock rating in mind. Reasonable regard for efficiency and economy would suggest that this antiknock rating be as high as is generally available at standard gasoline prices. It is further apparent that the fuel must be on the market, and widely distributed, by the time the engine which is to use it makes its appearance. In the past the premium grade of gasoline has pointed the way so that the designer could show what could be done in engines designed for better fuels than those generally available, and it seems probable that the premium fuel may continue to point the way along these lines.

Volatility is the second important property of fuel from a design standpoint. Here again the designer must know what are the properties of the fuel to be used. if he is to design intelligently. As volatility is increased, there is a loss in power output — unless the designer makes a proper decrease in the amount of heat applied to the mixture. A certain amount of heat is necessary for proper distribution; and, in addition to this, volatility will affect the starting characteristics, the carburetor design, the smoothness of operation, the amount of accelerating charge to be introduced and, to a large extent, the economy of operation of the engine. At the present time the tendency to vapor lock limits the volatility in so far as the lower end of the distillation curve is concerned, and the amount of manifold heat which must be applied to obtain good distribution has a great influence on vapor-lock tendencies. There are other parts of the fuel system, notably the fuel lines and supply pump, which are at the present time limiting the volatility of the fuels which we can use; and it will take time for the automotive engineer to work out satisfactory solutions of these problems. Until that time the petroleum technician must be prepared to curb his inclination to use extremely volatile fractions in his gasoline, and must work with the automotive engineer in the solution of the vapor-lock problem if serious fuel troubles are to be avoided. A change in the volatility of the gasoline marketed from winter to summer, as now practiced by many oil companies, is desirable if carefully governed. I know that the petroleum technician is under considerable economic pressure to use more volatile fuels; but, if he lets his desire outrun the reasonable limits of performance in the cars as we now know them, the result is going to be a good deal of trouble for all of us. The heat content of various gasolines varies considerably, but the heat content per cubic inch of normal mixture varies very little; and if the amount of heat necessary for proper distribution is applied to the manifold, I think we may look forward with confidence in the future to the use of more volatile fuels—providing we can learn how to handle them in the fuel supply and fuel metering systems of the car.

Research Should Continue

It appears to me that the chief misunderstandings and sources of friction between the technicians of the petroleum and automotive industries have been due to the fact that the channels for interchange of plans and information between the petroleum technologist and the automotive engineer were inadequate. The Co-operative Fuel Research Committee has been the principal meeting place for such discussions; but automotive representation on this committee has not been as general as it might be. With such meetings as this one, and with the organization of the fuels and lubricants section of the Society of Automotive Engineers, I feel that important new channels have been opened. I feel very strongly that the fuels and lubricants section

*Presented before Chicago meeting, A.P.I., October 25 to 28.

. . for high pressure oil and gas lines

Fulton High Pressure Regulator

CF

Two thousand pounds pressure to the square inch can be controlled, and gas can be passed on to the main or the distributing line at reduced pressure to suit requirements, by the use of the proper C-F Regulator. Standard Regulators are designed for pressures up to 600 pounds. For higher pressures, designs are adapted according to specifications.

The Chaplin-Fulton Manufacturing Co.
28-40 Penn Ave., Pittsburgh, Pa.

REPRESENTATIVES:

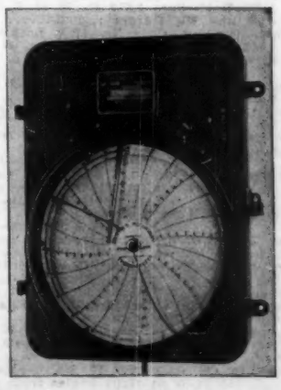
WESTCOTT & GREIS, Inc.
Sales and Service
Dallas—Tulsa

C. H. COLLINS
628 Dwight Bldg.
Kansas City, Mo.
Or any Jobber

HIMELBLAU, BYFIELD & CO.
228 N. LaSalle St.
Chicago, Ill.

Watch your Temperatures

to improve quality and lower cost



BY providing a day by day chart record of the temperature, BRISTOL'S Recording Thermometers reveal any and all fluctuations. They give, so to speak, a moving picture of process conditions—help banish waste, rejects and losses—help improve quality and make possible savings in fuel, time and in overhead. They offer a reliable record that can be analyzed, studied, filed, and preserved for future guidance.

Here's a subject of importance that is worth looking into. Ask for new Class 11 Thermometer Catalog, and state temperature applications in which you are interested.

THE BRISTOL COMPANY, WATERBURY, CONN.

TRADE MARK
BRISTOL'S
REG. U.S. PAT. OFF.

should be the place where the petroleum industry engineer can tell the automotive engineer what he may expect in the way of fuel development, and what he should design for in the future; and that, in meetings such as this, the automotive engineer should be given a chance to express his views. If meetings such as this can be kept up, say semiannually, and the information widely disseminated in the two industries, I can see no reason why we should not amicably solve our problems and avoid a great deal of the distress which in the past, has been passed on to the user of motor transportation. Undoubtedly, certain phases of the work will require co-operative laboratory work under the direction of both industries. The Co-operative Fuel Research Committee is set up for this purpose, and up to date has functioned extremely satisfactorily under considerable difficulties. It should be retained and strengthened.

Eastern Fields

(Continued from Page 53)

Township. The Pittsburgh Coal was at 515 feet and was cemented.

SOUTHEAST OHIO

Only one well was reported from Southeast Ohio during the week, the test of the Hopewell Fuel Gas Co. on the Joseph Flontt farm in the southwest quarter of Section 15, Reading Township, Perry County. It is a gas well in the Clinton sand at a depth of 3,012 feet and is showing for only about 160,000 feet a day.

In Licking County, Emerald Petroleum Co. has a rig standing for a second test on the Calvin Mossholder farm, Section 14, Fallsbury Township. In Tuscarawas County, Hopewell Fuel Gas Co. is drilling on the C. M. Mussey farm, Lot 22, Washington Township.

Wildcat Operations in Gulf Coast

(Continued from Page 47)

Texas Co.'s No. 1 Ellis, 1,660 ft. N, 807 ft. E, from NW cor. of lease, H. N. Little Sur. ..... Drlg. sandy shale 4,995 ft.

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Prod. Co.'s No. 5 Fisher, Wm. Bloodgood Sur., 75 ft. N line, 191 ft. W of No. 4 ..... T.D. 4,407 ft.; sidetracked 4,239 ft.; fishing D.S.

Mills Bennett Prod. Co.'s No. 3-E Gulf fee, 442 ft. W along S line, 710 ft. N at right angles to S line.... Drlg. sandy lime 3,473 ft.

Mills Bennett Prod. Co.'s No. 1-D Barber, 78 ft. S, 66 ft. W of NE cor. ..... Drlg. cap rock 1,229 ft.

Humble O. & R. Co.'s No. 3-C Kirby, H. Griffith Sur., 311 ft. from SE line, 659 ft. NE line of lease ..... Drlg. cap rock 1,258 ft.

Sinclair Prairie Oil Co.'s No. 14 Wilburn (W.O.) ..... T.D. 3,661 ft.; sidetracked 3,050 ft.; drlg. new hole in lime 4,441 ft.

Sinclair Prairie Oil Co.'s No. 15 Wilburn, Henry Griffith League, 150 ft. W of No. 14 ..... Rigging.

Sinclair Prairie Oil Co.'s No. 16 Wilburn, 50 ft. N and 50 ft. W of No. 12 ..... Drlg. sandy lime 2,933 ft.

Sun Oil Co.'s No. 11 J. Wilburn (W.O.), Wm. Hodges Sur. ..... Drlg. sand 5,613 ft.

Sun Oil Co.'s No. 14 J. Wilburn, Henry Hodges Sur. (W.O.) ..... Drlg. sandy shale 4,877 ft.

Sun Oil Co.'s No. 16 J. Wilburn, Henry Griffith Sur. (W.O.) ..... T.D. 3,760 ft.; rigging to W.O.

Sun Oil Co.'s No. 17 Wilburn, Henry Griffith League, 150 ft. W of No. 6 and 50 ft. S of N line ..... Derrick.

Texas Co.'s No. 7 Wilburn (W.O.), Henry Griffith League ..... T.D. 5,174 ft.; sidetracked 4,394 ft.; drlg. new hole 4,569 ft.

Texas Gulf Prod. Co.'s No. 2-B Barbez (W.O.), Henry Griffith League, 330 ft. W SE cor., 70 ft. W of S line ..... T.D. 5,100 ft.; rigging up to W.O.

Texas Gulf Prod. Co.'s No. 2 Fitzgerald, Henry Griffith League, 300 ft. W line, 80 ft. S line ..... Drlg. lime 3,733 ft.

Yount Lee Oil Co.'s No. 31 Chambers County (W.O.), Wm. Bloodgood Sur. ..... T.D. 4,334 ft.; sidetracked 4,274 ft.

BIG CREEK—FORT BEND COUNTY

C. & C. Drlg. Co.'s No. 1 Wheat, M. Young Sur., 265 ft. NE of Gulf's No. 3 Wheat ..... Abd. 3,762 ft.

Gulf Stream, Inc.'s No. 1 A. H. Theis, 336 ft. E of old No. 4 A. H. Theis in line, Mitchell Young Sur. ..... No report.

BLUE RIDGE—FORT BEND COUNTY

San Jacinto Oil Co.'s No. 2 Blakely-E, Drew Sur., 100 ft. E, 150 ft. N of No. 1 Blakely ..... Drlg. sand 4,740 ft.

RABBS RIDGE—FORT BEND COUNTY

Humble O. & R. Co.'s No. 20-A F. I. Booth, S. Kennedy Sur., 893 ft. E of No. 13 ..... Drlg. lime 3,965 ft.

Humble O. & R. Co.'s No. 7 M. Gubbles, S. Kennedy Sur., 700 ft. S of N line, 1,250 ft. E of W line of tract ..... Drlg. shale 4,775 ft.

Humble O. & R. Co.'s No. 16-B Lockwood & Sharp, John Rabb Sur., 2,872 ft. W of E line, 376 ft. N of S line, No. 1 tract ..... Drlg. shale 5,275 ft.

Humble O. & R. Co.'s No. 17-B Lockwood & Sharp, 2,872 ft. N of E line, 1,139 ft. N of S line of L. & S. No. 1-A tract ..... Comp. 47 bbls. per hour; ⅜-in. choke, 5,263 ft.

Humble O. & R. Co.'s No. 21 Lockwood & Sharp, John Rabb Sur. ..... Drlg. rock 2,982 ft.

Texas Co.'s No. 5 Waters, 300 ft. S, 300 ft. W from NE cor. of lease ..... Drlg. shale 5,292 ft.

West-Len Oil Co.'s No. 1 Mulahill, 300 ft. N of S line, 300 ft. W of E line ..... T.D. 5,426 ft.; standing.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 37 J. M. Moore, 4,842 ft. W line of J. Frazier Sur., 275 ft. E at right angles to lease.. Drlg. gumbo 2,220 ft.

SUGARLAND—FORT BEND COUNTY

Dewalt Oil Co.'s No. 1 Peterson ..... No report.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 2 Broussard-Orme, Martin Dunman Sur., 300 ft. S of No. 1-B Cade ..... Drlg. hard sand 2,497 ft.

Yount Lee Oil Co.'s No. 33 Cade, 600 ft. NW of No. 1-B Cade, 755 ft. from No. 1 Smith, N. Fitzsimmons Sur. ..... Drlg. sand 3,204 ft.

Yount Lee Oil Co.'s No. 37 Cade, N. Fitzsimmons Sur., 600 ft. S of No. 36 ..... Drlg. sand 4,589 ft.

Yount Lee Oil Co.'s No. 1-B Cade, N. Fitzsimmons Sur., 488 ft. from S line, 330 ft. from E line ..... Cmtd. 5,910 ft.

Yount Lee Oil Co.'s No. 1-B Smith ..... Drlg. sand 4,109 ft.

Yount Lee Oil Co.'s No. 19 Smith, Martin Dunman Sur., 150 ft. N at right angles from center of line between 14 and 15 ..... Drlg. sand 3,519 ft.

ARRIOLA—HARDIN COUNTY

Republic-Houston Oil Co.'s No. 5 Arriola, 400 ft. NE of No. 4 Arriola, Arriola Sur. ..... Rigging.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 102 Jordit, Jordit Sur. ..... Set screen 1,435 ft.; bailing.

SOUR LAKE—HARDIN COUNTY

Arlie Pet. Co.'s No. 1 Sour Lake Bank, H.&T.C. Sur., NW cor. Blk. 11, Sec. 69 ..... T.D. 2,050 ft.; standing.

Sesmo Oil Co.'s No. 1 W. R. Sasewell, 940 ft. S of NW cor., and 600 ft. from E line, B.B.B.&C. Sur. ..... Derrick.

GENOA—HARRIS COUNTY

Jack Schultz et al's No. 1 Syndicate Land Co., 2,300 ft. N, 200 ft. W, SE cor. Pruett Sur. ..... Drlg. shale 3,100 ft.

GOOSE CREEK—HARRIS COUNTY

Gulf Prod. Co.'s No. 17-A Tabb, Wm. Scott Sur., 1,288 ft. N line, 50 ft. E line (W.O.) ..... Drlg. gumbo 3,825 ft.

Smith-Faust's No. 1 Washington-Texas Prod. Co., Wm. Scott Sur., 300 ft. W of E line, 75 ft. S of N line, 2 acres ..... Drlg. sandy shale 2,065 ft.

HUMBLE—HARRIS COUNTY

Wilson Pet. Co.'s No. 1 Cicero (W.O.) ..... T.D. 3,450 ft.; sidetracked 3,340 ft.; drlg. new hole 3,438 ft.

MYKAWA—HARRIS COUNTY

Crown-Framer Oil Co.'s No. 4 Minnetex, 165 ft. S, 120 ft. W, of NE cor. Blk. 193, Wm. Lovett Sur. (W.O.). Drlg. sand 6,638 ft.

PIERCE JUNCTION—HARRIS COUNTY

Gulf Prod. Co.'s No. 37 Taylor, 980 ft. S, 975 ft. W of NW cor. J. Hamilton Sur. No. 52 ..... Derrick.

Moody Corp.'s No. 4 K. T. Whitehead, Hamilton Sur., 5,136 ft. N line, 50 ft. E line of lease ..... Drlg. salt 4,124 ft.

Rio Bravo Oil Co.'s No. 25-A Settegast, 625 ft. W, 525 ft. N of SE cor. A lease, J. Kopman Sur. (W.O.).... Drlg. shale 4,026 ft.

White & Ward's No. 1 Bullock ..... Standing 4,005 ft.

TOMBALL—HARRIS COUNTY

Amerada Pet. Corp. et al's No. 1 Fletcher, J. House Sur., 162 ft. N line, 1,852 ft. S line of lease ..... Rigging.

Humble O. & R. Co.'s No. 3 Bloecher, C. Goodrich Sur., center of 17-ac. tract ..... Drlg. shale 6,691 ft.

Humble O. & R. Co.'s No. 1-B Kobs, 1,399 ft. W of E line, 466 ft. N of S line, J. H. Edwards Sur. ..... Abd. 5,609 ft.

Humble O. & R. Co.'s No. 1 Petrick, J. M. Hooper Sur., 600 ft. N line, 466 ft. E line of lease ..... Rigging.

Humble O. & R. Co.'s No. 1 Quilter, A. Senchel Sur., 1,320 ft. out of NE cor. 320-ac. tract ..... Drlg. shale 4,776 ft.

Humble O. & R. Co.'s No. 1 Theis, 600 ft. N of S line, 500 ft. E of W line, 100-ac. tract, C. Goodrich Sur. Comp. 65 bbls. daily; ½-in. choke, 5,580 ft.

Magnolia Pet. Co.'s No. 1 Ervine, J. House Sur., 1,178 ft. E line, 1,399 ft. S line of lease ..... Drlg. sand 5,580 ft.

Magnolia Pet. Co.'s No. 1 Rudel-Oster, J. House Sur., 3,664 ft. S line, 162 ft. W line ..... Drlg. shale 5,084 ft.

Texas Co.'s No. 1 Hirsh, J. House Sur., 466 ft. N, 500 ft. E of SW cor. of 61-ac. tract ..... Drlg. shale 1,130 ft.

Texas Co.'s No. 1 Scherer, J. House Sur., 410 ft. E, 466 ft. N of SE cor. ..... Drlg. clay 1,101 ft.

FANNETT—JEFFERSON COUNTY

Black Gold Oil Co.'s No. 1 Jackson, Wm. Smith Sur., 3,766 ft. S line, 117 ft. from W line (356) ..... Drlg. shale 4,480 ft.

Gulf Prod. Co.'s No. 14 Thomas, 951 ft. W, 100 ft. N of SE cor. of 446-ac. tract, Wm. Smith Sur. ..... Rigging.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Co.'s No. 7 Davis (W.O.), Duncan Sur.. Drlg. shale 7,248 ft.

Cranfill-Reynolds Co.'s No. 11 Moores Bluff, Duncan Sur., 2,100 ft. from N line, 1,069 ft. from E line of 632-ac. tract ..... Drlg. sand 4,871 ft.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 2 Crowe & Jacobs, 1,700 ft. E, 1,050 ft. N of SW cor. of H.&T.C. Sur. No. 21 ..... T.D. 6,560 ft.; sidetracked and drilled to 3,785 ft.; abd.

HULL—LIBERTY COUNTY

Eclipse Oil Co.'s No. 1 Ward, (W.O.) Jesse Devore Sur., 50 ft. S, 50 ft. W of NE cor. Empire G. & F. Co.'s 13 acres ..... No report.

W. B. Flynn's No. 2 Flynn, J. Devore Sur., 25 ft. S No. 1. T.D. 1,546 ft.; fishing.

Hannah Oil Co.'s No. 1 Hannah, J. Devore Sur. (W.O.).. Rigging.

Hannah Oil Co.'s No. 2 Hannah, J. Devore Sur. ..... Derrick.

Houston Prod. Co.'s No. 3 Orgain, J. Devore Sur., 50 ft. from N and W lines of lease ..... Comp. 40 bbls. per hr.; 5/16-in. choke, 4,671 ft.

Humble O. & R. Co.'s No. 27 Hooks-Guedry, Jesse Devore Sur. ..... Drlg. shale 3,777 ft.

H. L. Mecom et al's No. 1 Barrows, J. Devore Sur., 50 ft. N of CSL of strip on 3-ac. tract ..... Drlg. 2,605 ft.

Miramar Oil Corp.'s No. 1-B Phoenix, J. Devore Sur., 155 ft. from N line, 700 ft. from W line of lease .... Drlg. gumbo 1,210 ft.

Miramar Oil Corp.'s No. 4 Phoenix, 75 ft. N, 37 ft. E from NW cor. of Houston Prod. Co.'s Orgain lease.. Comp. producer 4,400 ft.

Miramar Oil Corp.'s No. 5 Phoenix Dev. Co., J. Devore Sur., 50 ft. from NW cor. of 25-ac. lease ..... Drlg. gumbo 600 ft.

The Texas Co.'s No. 8 Hannah (W.O.), Jesse DeVore Sur. ..... T.D. 5,376 ft.; sidetracked; cmtd. csg. 4,335 ft.

Yount Lee Oil Co.'s No. 3 Hooks-Sterling, Jesse Devore Sur., 158 ft. S of N line, 150 ft. W of E line of 5-ac. tract ..... Rigging.

LIBERTY FIELD—LIBERTY COUNTY

Ross Oil Co.'s No. 1 Richardson, M. G. White Sur., 120 ft. E of Gulf-Humble's No. 1 Carter ..... Derrick.

CONROE—MONTGOMERY COUNTY

Alpha Pet. Co.'s No. 1 Texas Dev. Co. ..... Comp. 40 bbls. per hour; ½-in. choke, 5,076 ft.

Alpha Pet. Co.'s No. 5 South Tex. Dev. Co., 466 ft. N line, 933 ft. E of No. 1, T.&N.O. No. 13 Sur. ..... Moving in material.

Brown & Wheeler's No. 1 Gilbert, J. A. Davis Sur., 1,050 ft. S, 4,327 ft. W of lease ..... Csg. cmtd. 5,158 ft.

Feltex Oil Co.'s No. 3 Kirby-Bertrand, Wagers Sur., 1,267 ft. S of No. 1, center E and W of tract ..... Sand 5,115 ft.

Gulf Coast Drlg. & Prod. Co.'s No. 2 J. L. Hensley, A. Steele Sur., 466 ft. S line in center E and W of strip ..... Derrick.

Gulf Coast Drlg. & Prod. Co.'s No. 12 Keystone Mills, A. James Sur., 467 ft. W line, 933 ft. S of No. 11.. Derrick.

Gulf Coast Drlg. & Prod. Co.'s No. 12-B Keystone Mills ..... Comp. 85 bbls. per hour; ½-in. choke, 5,102 ft.

Gulf Coast Drlg. & Prod. Co.'s No. 13 Keystone Mills, 1,441 ft. N line, 466 ft. E line ..... Rigging.

Gulf Oil & Sulphur Co.'s No. 2 Springfield, J. S. Springfield Sur., 466 ft. from SW line, 100-ac. lease ..... Derrick.

Harrison & Abercrombie's No. 1 McShan, T. M. Wiggins Sur., 466 ft. N line, in center E and W of survey (W.O.) ..... Rigging 5,112 ft.

Humble O. & R. Co.'s No. 3-B Cartwright, J. R. Davis Sur., S offset to Brown & Wheeler's No. 1 Gilbert.. Drlg. shale 4,991 ft.

Humble O. & R. Co.'s No. 3 P. Collins, 1,050 ft. N of S line, center E and W, 75-ac. tract, L. Smith Sur.. Shale 5,133 ft.; cmtd. csg.

Humble O. & R. Co.'s No. 6 Hirsch, D. McIntyre Sur., 466 ft. N line, 330 ft. E line of survey ..... Drlg. shale 3,113 ft.

Humble O. & R. Co.'s No. 4 D. P. Griffin, 330 ft. W of E line, 103 ft. N of S line of tract, Wilson Strickland Sur. ..... Drlg. shale 4,971 ft.

Humble O. & R. Co.'s No. 19 Madeley, Ransom House Sur. ..... Drlg. shale 4,062 ft.

Humble O. & R. Co.'s No. 20 Madeley ..... Drlg. shale 1,271 ft.

Humble O. & R. Co.'s No. 25 Madeley, Ransom House Sur., 933 ft. S of No. 15 ..... Comp. 74 bbls. per hour; ½-in. choke, 5,137 ft.

Humble O. & R. Co.'s No. 4 L. B. McComb, 1,134 ft. NW, 875 ft. NE at right angles out of SW cor. of L. Smith Sur. ..... Drlg. shale 5,091 ft.

Humble O. & R. Co.'s No. 22 Moore, L. Smith, 933 ft. SW of No. 21 ..... Sand 5,126 ft.; cmtd. csg.

Humble O. & R. Co.'s No. 21 Moore, L. Smith Sur., 933 ft. SW of No. 16 ..... Sand 5,120 ft.

Humble O. & R. Co.'s No. 39 Moore, L. Smith Sur., 933 ft. SW of No. 38 ..... Comp. 82 bbls. per hour; ½-in. choke, 5,129 ft.

Humble O. & R. Co.'s No. 49 South Tex. Dev. Co., Theo. Slade Sur., 950 ft. E of No. 47 ..... Drlg. shale 3,271 ft.

Humble O. & R. Co.'s No. 50 South Tex. Dev. Co., 950 ft. E of No. 49, Theo. Slade Sur. ..... Drlg. shale 3,630 ft.

Humble O. & R. Co.'s No. 53 South Tex. Dev. Co., 700 ft. NE of No. 49, Theo. Slade Sur. ..... Drlg. shale 2,850 ft.

Humble O. & R. Co.'s No. 3-D South Tex. Dev. Co. ..... Shale 5,131 ft.; cmtd. csg.

Humble O. & R. Co.'s No. 9 G. A. Wilson ..... Drlg. shale 931 ft.

Moore & Bruton's No. 3 W. N. Hooper, I.&G.N. No. 11 Sur., midway between Nos. 1 and 2 ..... Comp. 75 bbls. per hour; ½-in. choke, 5,100 ft.

Strake Pet., Inc.'s No. 1 Krohn, 466 ft. E line, 330 ft. N line, S. H. Bryan Sur. ..... Drlg. shale 5,050 ft.

Strake Pet., Inc.'s No. 2 Krohn, Stephen Bryan Sur. ... Derrick.

Strake Pet., Inc.'s No. 3 Krohn, 330 ft. S of No. 1, S. H. Bryan Sur. ..... Spudding.

Sun Oil Co.'s No. 21 Foster, J. Bricker Sur. ..... Drlg. shale 1,367 ft.
Sun Oil Co.'s No. 25 Foster, J. Bricker Sur. ..... Drlg. shale 1,344 ft.
Sun Oil Co.'s No. 32 Foster, J. Bricker Sur., 1,358 ft. S, 1,613 ft. E of lease and survey line ..... Comp. 42 bbls. per hour; ½-in. choke, 5,146 ft.
Sun Oil Co.'s No. 6 Keystone Mills, 1,057 ft. S of No. 5 and 875 ft. W of No. 2 ..... Drlg. shale 5,040 ft.
Sun Oil Co.'s No. 7 Keystone Mills, A. Steele Sur., 1,-600 ft. S of No. 6 and 877 ft. W of No. 3 ..... Drlg. shale 1,594 ft.
Sun Oil Co.'s No. 9 Keystone Mills, A. Steele Sur., 437 ft. S of N line, 906 ft. W of No. 5 ..... Drlg. shale 3,006 ft.
Sun Oil Co.'s No. 10 Keystone Mills, A. Steele Sur. .... Derrick.
Texas Unity Oil Co.'s No. 1 Keystone Mills ..... Comp. 60 bbls. per hour; ½-in. choke, 5,120 ft.
Texas Unity Oil Co.'s No. 2 Keystone Mills, 223 ft. N line, 466 ft. W line, L. Smith Sur. ..... Drlg. shale 1,350 ft.
Tide Water Oil Co.'s No. 13 Dean, 933 ft. N of No. 6, W. C. C. Lynch Sur. ..... Drlg. shale 1,926 ft.
Tide Water Oil Co.'s No. 15 Dean, 600 ft. SE of No. 1, W. C. C. Lynch Sur. ..... Drlg. shale 1,916 ft.
Tide Water Oil Co.'s No. 27 Lewis, C. B. Stewart Sur., 933 ft. E of No. 24 ..... Drlg. shale 1,920 ft.
Tide Water Oil Co.'s No. 28 Lewis, C. B. Stewart Sur., 933 ft. E of No. 26 ..... Drlg. shale 1,924 ft.
West Prod. Co.'s No. 1 Foster Lbr. Co., 467 ft. N line, 650 ft. W line, Sec. 3, T.&N.O. Sur. ..... No report.

ORANGE—ORANGE COUNTY

Gulf Prod. Co.'s No. 12 Hager-Moore (W.O.) ..... Drlg. shale 4,653 ft.

PORT NECHES—ORANGE COUNTY

Texas Co.'s No. 1-B Polk, Jacob Beaumont Sur., 150 ft. NE cor. ..... T.D. 3,251 ft.; cmtd. csg.
Texas Co.'s No. 2-B Polk, 695 ft. N, 150 ft. S of NE cor. of N. Jacob Beaumont Sur. ..... Reaming to straighten hole, 1,-266 ft.
Texas Co.'s No. 4 Kuhn, 150 ft. E, 150 ft. N of NW cor. of lease ..... Cmtng. csg. 1,296 ft.

LIVINGSTON—POLK COUNTY

Vick Borsodi et al's No. 1 West, E 3¼ acres of 35 acres, Roberts tract, A. Viesca Sur. ..... Cmtd. csg. 4,320 ft.; S.O. 4,330-59 ft.
Gist Oil Co.'s No. 1 Kingsbury County Holding Corp., A. Viesca Sur., 150 ft. N at right angles and 193 ft. E along S line of tract ..... Derrick.
Humble O. & R. Co.'s No. 1 Grandbury, 1,320 ft. N, center E and W of 50-ac. tract ..... Comp. 330 bbls. in 13 hrs.; ½-in. choke, 4,370 ft.
Humble O. & R. Co.'s No. 2 Grandbury, 520 ft. W of E line, 400 ft. N of S line, A. Viesca Sur. ..... Rigging.
Polk County Drlg. Co.'s No. 1 Cooper, 330 ft. S, 200 ft. E, NW cor. 12½ acres, A. Viesca Sur. ..... Drlg. shale 4,317 ft.
Shell Pet. Corp.'s No. 2 Davis & Holmes, A. Viesca Sur., 485 ft. N, 376 ft. W of NE cor. of Jim Duff 35-ac. tract ..... T.D. 4,400 ft.; comp. 150 bbls.; ½-in. choke.
Shell Pet. Corp.'s No. 3 Davis-Holmes, M. C. Swinney Sur., 577 ft. NE of center of SW line ..... Drlg. shale 581 ft.
Skelly Oil Co.'s No. 1 Sanćera, 755 ft. N of E line, 205 ft. S of N line, Sanders' 40 acres, A. Viesca Sur. ..... T.D. 4,322 ft.; made 65 bbls. through 2½-in. tubing; 20 hrs.
Skelly Oil Co.'s No. 2 Sanders, 300 ft. S line, 755 ft. E line of lease, A. Viesca Sur. ..... Rigging.

GRETA—REFUGIO COUNTY

Atlantic-Alamo Oil Co.'s No. 2 J. J. O'Brien, M. J. Ximines Sur. ..... Drlg. shale 1,300 ft.
Atlantic-Alamo's No. 2-E O'Brien, 933 ft. N of No. 1, 466 ft. E line ..... Drlg. shale 1,300 ft.
Atlantic-Alamo's No. 3-E O'Brien, 933 ft. from No. 2, 466 ft. E line ..... Drlg. sand 4,395 ft.
Atlantic Oil Prod. Co.'s No. 2-C O'Brien, 1,992 ft. N of No. 1 ..... T.D. 4,412 ft.; S.D.
Atlantic Oil Prod. Co.'s No. 3-C O'Brien, 2,788 ft. S of W line, 625 ft. W of E line ..... T.D. 4,399 ft.; washing.
Atlantic Oil Prod. Co.'s No. 4-C O'Brien, 466 ft. out of NE cor. ..... Drlg. shale 3,710 ft.
Atlantic Oil Prod. Co.'s No. 5-C O'Brien, 1,193 ft. S of N line, 638 ft. E line ..... Cmtd. csg. 1,300 ft.
Atlantic Oil Prod. Co. and Heyser & Heard's No. 2 O'Brien ..... Comp. 436 bbls.; 5/16-in. choke, 4,398 ft.
Circle W Oil Co.'s No. 7 J. M. O'Brien, 916 ft. N of No. 8, E. H. Winfield Sur. ..... Drlg. shale 2,810 ft.
Circle W Oil Co.'s No. 8 J. M. O'Brien, 1,008 ft. N of No. 9, E. H. Winfield Sur. ..... Drlg. shale 1,290 ft.
Dash Prod. Co.'s No. 1 E. J. J. O'Brien, 466 ft. S of N line, center E and W of tract, N. S. Crunk Sur. .. Drlg. shale 4,360 ft.
Dash Prod. Co.'s No. 3 O'Brien, N. S. Crunk Sur., 645 ft. of W line, 301 ft. at right angles R.R. ..... No report.
Floboots Oil Corp.'s No. 1 J. J. O'Brien, 466 ft. S of N line, 466 ft. E line, 50-ac. tract, N. S. Crunk Sur.. Drlg. shale 1,121 ft.
Floboots Oil Corp.'s No. 2-C O'Brien, 466 ft. out of SW cor. Lot 12 ..... Comp. 300 bbls.; ¼-in. choke, 4,-390 ft.
G. L. Gray Oil Corp.'s No. 1 F. Heard, 466 ft. E of W line, 486 ft. S of N line of NW 40-ac. tract out of Heard's 377-ac. tract ..... Drlg. shale 1,600 ft.
Greta Oil Corp.'s No. 1-C O'Brien, 350 ft. S line, 150 ft. E at right angles to highway ..... Drlg. sand 4,363 ft.
Greta Oil Corp.'s No. 2-C O'Brien, 250 ft. N line and 150 ft. E line at right angles to highway, Winfield Sur. ..... Cmtd. csg. 4,374 ft.
Greta Oil Corp.'s No. 5-B O'Brien, 466 ft. out of SW cor. of tract, E. Winfield Sur. ..... Drlg. shale 2,200 ft.
Hewitt & Daugherty's No. 1 M. F. Lambert, 2,530 ft. E of NW cor., Harper Sur., 466 ft. S in Hardwick Sur. ..... Rigging.
Humble O. & R. Co.'s No. 1 F. Heard, 466 ft. out of NW cor. Ximines Sur. ..... Blew out; T.D. 2,910 ft.
Edwin M. Jones' No. 2 O'Brien, E. H. Winfield Sur., Blk. 4, 466 ft. from N line in center E and W ..... Comp. 400 bbls.; ¼-in. choke, 4,-393 ft.
Edwin M. Jones' No. 3-A J. M. O'Brien, N. S. Crunk Sur., 950 ft. S and W lines of lease ..... Rigging.
Nesral Oil Co.'s No. 1 Ira Heard, M. J. Ximines Sur., 320 ft. out of NW cor. of 25-ac. tract ..... Fishing 5,962 ft.
Nesral Oil Co.'s No. 4 O'Connor ..... Rigging.
Nesral Oil Co.'s No. 5 O'Connor ..... Drlg. shale 2,578 ft.
Rutherford and Atlantic's No. 2-B O'Brien ..... Comp. 15 bbls. per hour; ¼-in. choke, 4,394 ft.
Southwest Pet. Corp.'s No. 2-A O'Brien, E. H. Winfield Sur., 466 ft. NW cor. 25-ac. tract ..... Comp. 600 bbls.; ¼-in. choke, 4,-390 ft.
Southwest Oil Corp.'s No. 3-B J. M. O'Brien, N. Crunk Sur., east offset United's No. 8 Fox ..... Drlg. 1,000 ft.
Southwest Oil Corp.'s No. 1-D J. M. O'Brieen, 466 ft. out of NW cor. of 26-ac. tract, N. S. Crunk Sur. ... T.D. 4,350 ft.; cmtd. csg.
Texas Gulf Prod. Co.'s No. 2 J. M. O'Brien, J. A. Peoples Sur., 466 ft. NW cor., Blk. 3 ..... Drlg. shale 4,068 ft.
Texas Gulf Prod. Co.'s No. 1 J. M. O'Brien, J. H. Winfield Sur., 466 ft. NS line, center E and W, Blk. 13 ..... Moving in material.
United Prod. Co.'s No. 7 W. T. Fox, 695 ft. SE of No. 6, Hews & Brown Sur. ..... Drlg. shale 3,910 ft.
United Prod. Co.'s No. 8 Fox est., 1,478 ft. N, 466 ft. E of SE cor. N. S. Cronk Sur. ..... Sand 4,399-4,403 ft.; flowed 25 bbls. in 2 hrs.; dead.
United Prod. Co.'s No. 9 Fox, 880 ft. NE of No. 6, Hews & Brown Sur. ..... Drlg. shale 4,350 ft.
United Prod. Co.'s No. 10 Fox, 894 ft. NE of No. 9, Hews & Brown Sur. ..... Rigging.
United Prod. Co.'s No. 11 Fox, 867 ft. NE of No. 10, Hews & Brown Sur. ..... Rigging.

CLAY CREEK—WASHINGTON COUNTY

Sun Oil Co.'s No. 9 Clay, 600 ft. NE of No. 1 Clay, J. F. Perry Sur., 757-ac. tract ..... Drlg. shale 2,514 ft.

BOLING—WHARTON COUNTY

Asher et al's No. 2 Rogers, S. F. Austin Sur., 685 ft. NE, 115 ft. NW of S cor. W. G. Reagin & Son's tract. Standing 1,215 ft.

SOUTH LOUISIANA FIELDS

ASSUMPTION PARISH

Barnsdall Oil Co.'s No. 1 Williams, 330 ft. out of NE cor. Sec. 38-14s-14e ..... T.D. 7,545 ft.; cmtd. csg.

DARROW—ASCENSION PARISH

Gulf Ref. Co.'s No. 1 Darrow Community, 600 ft. due N, 100 ft. due W of Rio Bravo's No. 1 Community .... Rigging.

VINTON—CALCASIEU PARISH

Starks & Broker's No. 11 A. J. Vincent, NW cor. SE Sec. 33-10s-12w ..... Moving in material.
Wilson Broach's No. 4 Wilson ..... Standing 3,806 ft.
Wilson Broach's No. 10 Wilson Strip, 650 ft. N, 379 ft. E, SW cor. SE NE Sec. 33-10s-12w ..... Derrick.
Wilson-Broach Co.'s No. 11 Wilson Strip, 450 ft. N, 643 ft. E of SW cor. SE NE Sec. 33-10s-12w ..... Drlg. gumbo 1,000 ft.
Gulf Ref. Co.'s No. 7 J. W. Gardner, 308 ft. E, 650 ft. N, SW cor. SE NE Sec. 33-10s-12w ..... T.D. 4,370 ft.; P.B. to 3,560 ft.
Vinton Pet. Co.'s No. 1 Vincent ..... Drlg. gumbo 1,085 ft.
Vinton Pet. Co.'s No. 22 Vincent, 685 ft. N, 620 ft. E of SW cor. Sec. 34-10s-12w ..... Standing 2,774 ft.

CAMERON MEADOWS—CAMERON PARISH

Humble O. & R. Co.'s No. 4 Cameron Meadows, 360 ft. N, 600 ft. W, SE cor. Sec. 21-14s-13w ..... Drlg. sand 853 ft.

CAMERON PARISH

Southern Sulphur Co.'s No. 1 Gulf of Mexico, 330 ft. S, 338 ft. E of SW cor. Sec. 29-15s-10w ..... Drlg. shale 3,250 ft.
Texas Co.'s No. 9 State, Calcasieu Lake, 16,055 ft. W, 3,270 ft. N, NE cor. Sec. 1-14s-9w ..... Derrick.

CALCASIEU PARISH

Gulf Ref. Co.'s No. 1 Sweet Lake Oil Co., 660 ft. N, 330 ft. E of SW cor. Sec. 29-10s-5w ..... Drlg. gumbo 1,225 ft.
Fred Oil Co.'s No. 1 Farszt, 566 ft. N, 300 ft. W, SE cor. NW SE Sec. 26-8s-10w ..... Standing.
Union Sulphur Co.'s No. 1 Barbe, 2,651 ft. W, 2,647 ft. S of NE cor. Sec. 1-9s-8w ..... Spudding.

CHOCTAW—IBERVILLE PARISH

Standard Oil Co. of La.'s No. 5 Myrtle Grove, 1,700 ft. N, 200 ft. W, SE SW cor. SW Sec. 52-9s-11e ..... Drlg. gumbo 1,650 ft.

EDGERLY—CALCASIEU PARISH

S. A. Emerson's No. 13 Hunter, 465 ft. N, 90 ft. E, SW cor. Sec. 21-9s-11w (W.O.) ..... No report.
Union Sulphur Co.'s No. 1 Hunter, 210 ft. E, 1,260 ft. N of SW cor. SE Sec. 21-9s-11w ..... Drlg. gumbo 1,047 ft.

GUEYDAN—VERMILLION PARISH

Pure Oil Co.'s No. 1 Grady Lee-Humble, 2,031 ft. E, 225 ft. N of NW cor. Sec. 34, in Sec. 27-11s-1w.. Drlg. sand 4,093 ft.
Pure Oil Co.'s No. 5 Mulvey, 500 ft. from No. 2 Mulvey, in line with Nos. 1 and 2 ..... Rigging.

LAFOURCHE PARISH

Barnsdall Oil Co.'s No. 1 Harang, Lot 6, in Twp. 17s-20e Drlg. shale 6,659 ft.

DOG LAKE—TERREBONNE PARISH

Texas Co.'s No. 9 Dog Lake ..... Drlg. sand 1,690 ft.

LAKE BARRE—TERREBONNE PARISH

Texas Co.'s No. 9 Lake Barre-L.L.&E., 4,013 ft. S, 305 ft. E of NW cor. Sec. 30-21s-20e in Sec. 36-21s-19e ..... Drlg. lime rock 3,625 ft.
Texas Co.'s No. 22 State-Lake Barre, 150 ft. northerly from No. 18 ..... Drlg. shale 4,728 ft.
Texas Co.'s No. 23 State-Lake Barrie ..... Drlg. sand 855 ft.

LAKE WASHINGTON—PLAQUEMINES PARISH

Humble O. & R. Co.'s No. 11 Cockrell & Moran ..... Gumbo 400 ft.; standing.
Humble O. & R. Co.'s No. 12 Cockrell & Moran ..... Standing 1,169 ft.
Humble O. & R. Co.'s No. 3 La. State, Twp. 20s-26e, 2,920 ft. N, 19 ft. E of station ..... Drlg. sand 3,239 ft.

LOCKPORT—CALCASIEU PARISH

Magnolia's No. 9 Farquaher, 200 ft. N, 150 ft. E of SW cor. NE SE Sec. 8-10s-9w (O.W.D.D.) ..... Drlg. sand 5,817 ft.
Magnolia Pet. Co.'s No. 4-A Watkins fee, 685 ft. E, 300 ft. N of SW cor. NW NE Sec. 9-10s-9w ..... Drlg. sand 3,986 ft.
Union Sulphur Co.'s No. 1 Moss (W.O.) ..... Drlg. sand 5,508 ft.

HACKBERRY—CAMERON PARISH

Wilford Lahay et al's No. 1 Roux (W.O.) ..... Washing to bottom 1,619 ft.
Gulf Ref. Co.'s No. 13 Irwin, 865 ft. N, 518 ft. E of SW cor. Sec. 44-12s-9w ..... T.D. 7,399 ft.; made 60 bbls. an hr. for 2 hrs. and went dead.
Pop Oil Co.'s No. 1 Yount Lee, 3,996 ft. W, 100 ft. N of SE cor. Sec. 19-12-10w ..... T.D. 3,922 ft.; drlg. cmt. plug.
Union Sulphur Co.'s No. 1 Barber est., 1,720 ft. N line, 320 ft. E of SW cor. Sec. 12-12s-10w ..... Drlg. sand 3,012 ft.
Union Sulphur Co.'s No. 8 Humble ..... Drlg. gumbo 992 ft.

IOWA—CALCASIEU AND JEFF DAVIS PARISHES

Barnsdall Oil Co.'s No. 1 Heyd, 330 ft. SW cor. of E½ SW Sec. 7-9s-6w ..... Drlg. shale 6,754 ft.
Shell Pet. Corp.'s No. 5 Heyd, 325 ft. S of NW cor. of Sec. 18-9s-7w, and 325 ft. W of E line of Sec. 18.. T.D. 6,855 ft.; comp. 600,000 ft. of gas and 22 bbls. of oil; 22/64-in. choke.
Shell Pet. Corp.'s No. 1 Tuten, 265 ft. S, 330 ft. W of NE cor. SW Sec. 13-9s-7w ..... Drlg. shale 2,409 ft.

JEFFERSON DAVIS PARISH

Humble O. & R. Co.'s No. 2 Devilbiss, 1,350 ft. S, 350 ft. W of NE cor. Sec. 14-9s-4w ..... T.D. 7,843 ft.; sidetracked 6,743 ft.; drlg. new hole 7,174 ft.

JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 13 Houssiere-Latrielle, Sec. 47-9s-2w, 300 ft. E of No. 12 ..... Drlg. shale 5,447 ft.

EAST BATON ROUGE PARISH

British-American Oil Co.'s No. 1 Louisiana, 2,750 ft. NE NW cor. Sec. 79, and 1,700 ft. N of NE Sec. 79, in Sec. 6-8s-1e ..... D.S. stuck at 4,444 ft.; repairing derrick.

LEESVILLE—LA FOURCHE PARISH

Gulf Ref. Co.'s No. 1-B Community, 1,685 ft. E, 365 ft. S of NW cor. Sec. 26-21s-22e ..... Comp. 450 bbls. 9 hrs.; ½-in. choke, 3,803 ft.
Texas Co.'s No. 9 L.L.&E., 2,921 ft. S, 900 ft. W from NE cor. Sec. 27-21s-22e ..... Rigging.

PORT BARRE—ST. LANDRY PARISH

Cale O. & G. Co.'s No. 1 Thompson ..... Drlg. sand 3,410 ft.
Campbell et al's No. 1 J. E. Jeonsonne, Sec. 7-6s-5e, 30 ft. N of S line in center E and W of 30-ac. tract.. Drlg. sand 3,390 ft.
Texas Co.'s No. 17 Botney Bay, 1,800 ft. S 8 deg. W, 600 ft. N 82 deg. west southern NE 560 deg. tract, Sec. 4-6s-5e ..... Derrick.
Texas Co.'s No. 18 Botney Bay ..... Drlg. sand 3,419 ft.

PLAQUEMINES PARISH

Southern Sulphur Co.'s No. 1 Bay Adams ..... Rig.

SORRENTO—ASCENSION PARISH

Union Sulphur Co.'s No. 25 United Land ..... No report.

STARKS—CALCASIEU PARISH

Union Sulphur Co.'s No. 2 Industrial Lbr. Co., 2,400 ft. N, 412 ft. W, SE cor. Sec. 19-9s-12w ..... Drlg. salt 3,953 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 779 fee, 1,153 ft. N, 795 ft. E of center of Sec. 29-9s-10 ..... Drlg. sand 3,591 ft.
Union Sulphur Co.'s No. 781 fee, 1,768 ft. W, 726 ft. N of C Sec. 29-9s-10w ..... Drlg. shale 3,138 ft.
Union Sulphur Co.'s No. 783 fee, Sec. 29-9s-10w ..... Salt 5,117-5,761 ft.; sidetracked to 4,555 ft.; pumping 25 bbls.; comp.
Union Sulphur Co.'s No. 786 fee ..... Drlg. gumbo 2,468 ft.

ST. BERNARD PARISH

Southern Sulphur Co.'s No. 1 Lake Lery, 400 ft. W, 500 ft. N, SW cor. Sec. 28-13s-15e ..... Cmtd. csg. 212 ft.

Southern Sulphur Co.'s No. 1 State Lake Bargne, 850 ft. N, 230 ft. E, SE cor. Sec. 32-13s-15e ..... Cmtd. csg. 650 ft.

ST. LANDRY PARISH

Gaunch Synd.'s No. 1 Lewis, 300 ft. N and E of SW cor. NW NE Sec. 29-5s-6e ..... Cmtd. csg. 111 ft.
H. H. Hotchins Lbr. Co.'s No. 1 Whiteman Lbr. Co., 350 ft. out of SW cor. NE Sec. 15-5s-6e ..... Cmtd. csg. 710 ft.

ST. MARTIN PARISH

Standard Oil Co. of Kansas' No. 1 E. B. Hopkins, Sec. 32-10s-4e ..... Cmtd. 6,010 ft.

TERREBONNE PARISH

Texas Co.'s No. 9 State-Caillou Island ..... Drlg. sand 1,860 ft.
Texas Co.'s No. 1 School Board-Bay St. Elaine ..... Rigging.
Texas Co.'s No. 2 State-Four Isle ..... Moving in.
Texas Co.'s No. 1 State Bay-St. Elaine, 3,900 ft. N, 2,300 ft. E of SW cor. Sec. 8-22s-18e ..... Moving in.

VERNON PARISH

E. Dawson's No. 1 Delta Land & Timber Co., C SW SW Sec. 2-1n-11e ..... T.D. 2,820 ft.; sidetrack 2,615 ft; drlg. new hole, sand 2,006 ft.

WHITE CASTLE—IBERVILLE PARISH

Shell Pet. Corp.'s No. 7 Wilburn, 625 ft. N 60 deg. W. 1,165 ft. N 29 deg. E. SE of Lot 2, Sec. 9-11s-12e... T.D. 5,202 ft.; cmtd. csg.

TEXAS

MISCELLANEOUS WILDCATS

AUSTIN COUNTY

R. R. Mitchell's No. 1 H. Schlerda, J. F. Fitzgibbons Sur., 300 ft. out NE cor. 96-ac. tract ..... Moving in material.

BRAZORIA COUNTY

Danciger O. & R. Co.'s No. 2 Hunt, 6,550 ft. E line, 5,550 ft. S line, W. Carson Sur. (W.O.) ..... T.D. 8,053 ft.; P.B. to 6,720 ft.; drlg. sand 6,825 ft; showing gas.

Danciger O. & R. Co.'s No. 1 L. Williams, 700 ft. NE line, 726 ft. SE line of 180-ac. tract, W. C. Carson Sur. ..... Moving in material.

BRAZOS COUNTY

H. Elliott et al's No. 1 W. F. Odom, near center of 379-ac. tract in SW cor. of Isack Curll Sur. ..... Rigging.
Liner et al's No. 1 Peters, 300 ft. SE line, 300 ft. SW line of E. V. Peter fee, G. Powell Sur. ..... Derrick.
F. H. Scott's No. 1 Klintworth, I. Curd Sur., 300 ft. from N line, 400 ft. from E line ..... T.D. 1,487 ft.; making D.S. test of gas sand 1,393-1,415 ft.

CHAMBERS COUNTY

Mills & Jones' No. 1 Gau, J. S. Roberts Sur., 255 ft. W, 1,052 ft. S of NE cor. of 138-ac. tract (W.O.) ..... T.D. 5,626 ft.; sidetracked at 3,650 ft.; drlg. shale 4,400 ft.
Smith & Lavender's No. 1 McCormick, F. Ludlow Sur., 150 ft. NE cor. ..... Derrick.

COLORADO COUNTY

Columbus Dev. Co.'s No. 1 Miller, H.T.&B. No. 8, 2,268 ft. E of W line, 1,345 ft. S of N line of survey.. No report.

FAYETTE COUNTY

Colorado Oil Corp., J. Winn Sur., 650 ft. NE of center of SW line of 63.8-ac. tract ..... Drlg. shale 2,006 ft.
Columbus Drlg. Co. and Gulf Prod. Co.'s No. 1 Turner, 400 ft. E of river, 300 ft. N of S line, J. Petty Sur... Sidetracked 1,500 ft.; drlg. 3,180 ft.; new hole.

FORT BEND COUNTY

Fresno Oil Corp.'s No. 1 M. T. Wood, T. Gleason Sur., center of 10-ac. tract (Blk. 474) ..... T.D. 5,082 ft.; washing to bottom.
A. N. Phillips et al's No. 1 Grigar, 2,150 varas E line, 1,550 varas N line, J. S. O'Connor Sur. ..... T.D. 700 ft.; standing.
Quintana Oil Co. and Great So. Life's No. 1 Great So. Life, E. C. Robertson Sur., 500 ft. S of N line, 500 ft. W of Brazos River ..... Drlg. sand showing oil 6,320 ft.

GRIMES COUNTY

Clark & Dodd's No. 1 Murry, 150 ft. W line, 300 ft. S line, Anderson Sur. ..... Spudded; standing.
Cambrian Oil Co.'s No. 1 W. V. Sangster, John Moore Sur., 300 ft. out of most westerly NW cor. of 218-ac. tract ..... Derrick.
Foster et al's No. 1 Quinn, 7,100 ft. from W line, 3,900 ft. from N line of S. F. Austin Sur. ..... Standing 65 ft.
Humble O. & R. Co.'s No. 1 Seaton, F. G. Seaton Sur., 360 ft. N and W, 71-ac. tract ..... Drlg. sand 3,765 ft.
H. C. Ratcliff's No. 1 Fulgham, A. Tuttle Sur., 600 ft. N line, 540 ft. W line of lease ..... Derrick.

HARRIS COUNTY

J. A. Hodges' No. 1 Scott, 200 ft. S, 900 ft. W of intersection of Crosby Huffman, F. Rankin Sur. ..... T.D. 587 ft.; standing.
G. T. Lewis, tr.'s No. 1 Gore, S. McKissick Sur., 518 ft. SW along SE line of 100-ac. tract from W cor. of S. V. Allen's 105-ac. tract and 500 ft. NW at right angles in 100-ac. tract (W.O.) ..... Drlg. shale 5,275 ft.
Russell et al's No. 1 Burt & Griffith, S. Keely Sur., 200 ft. N line, 200 ft. E of highway ..... Drlg. gumbo 2,120 ft.
E. E. Young et al's No. 1 Paddock, J. Cunningham Sur., 200 ft. W of E line of Blk. 41 on line dividing Blks. 46 and 47 ..... Drlg. shale 1,700 ft.

JACKSON COUNTY

Ed Parsons et al's No. 1 Clark, 300 ft. out SW cor. of R. J. and M. Clark lease, A. S. White Sur. ..... Drlg. clay 560 ft.

JASPER COUNTY

Turnbull & Erwin's No. 1 Green, W. B. Green Sur., 2,369.3 varas S, 857 varas W of NE cor. ..... Abd. 4,015 ft.

JEFFERSON COUNTY

Sun Oil Co.'s No. 1 Paggi, 990 ft. W, 1,610 ft. N of SE cor. of T.&N.O. Sur. No. 33 ..... Drlg. sandy shale 6,244 ft.
Texas Co.'s No. 1 J. R. Bevil, 150 ft. each way out of NE cor. of lease, Brown & Caswell Sur. ..... Drlg. gumbo 1,282 ft.

LEON COUNTY

Shell Pet. Corp.'s No. 1 A. Beggs, 406 ft. N, 1,138 ft. E of inside line of lease, John Carter Sur. ..... Sand 5,743 ft.; est. 15,000,000 ft. of gas daily.

LIBERTY COUNTY

W. W. Algren, tr.'s No. 1 Nona Mills Lbr. Co., J. E. Mayfield Sur., 400 ft. from W and 200 ft. from N line of lease ..... Drlg. shale 4,220 ft.
E. V. Parsons et al's No. 1 Foster Lbr. Co., Ann Holhausen Sur., 750 varas S line, 3,700 varas W of E line ..... Derrick.
Thomas et al's No. 1 A. Ercke, 600 ft. E of W line, 2,350 ft. N of S line, A. H. Ercke Sur. in Reason & Green Sur. ..... Drlg. shale 3,460 ft.

MATAGORDA COUNTY

Continental Oil Co.'s No. 1 Baker, 400 ft. out of SW cor. Lot 17, Robbins & Middle Subd., J. W. Criswell Sur. ..... Stuck D.S. in heaving shale 6,504 ft.; fishing at 5,200 ft.

Oils Consolidated, Inc.'s No. 1 Hawkins, Daniel McCarthy Sur., 1,340 ft. NE, 350 ft. NW of S cor. .... Drlg. gumbo 1,460 ft.
United North & South Dev. Co.'s No. 1 Unit 6 (No. 2 Stoddard), 25 ft. each way out of NW cor. of Lot 19, Buckeye Townsite ..... T.D. 7,372 ft.; P.B. to 5,500 ft.
United North & South Dev. Co.'s No. 1 Unit 25, 1,325 ft. S, 1,000 ft. E of No. 1 Unit 6 ..... Drlg. shale 7,864 ft.

MONTGOMERY COUNTY

Baker et al's No. 1 Benker, D. James Sur. ..... Coring hard sand and shale 2,750 ft.
L. C. Thorpe's No. 1 Sutherland, 2,450 ft. E line, 350 ft. N line of C. McRay Sur. ..... Abd. 1,766 ft.

ORANGE COUNTY

Texas Louisiana Oil Co.'s No. 1 Starks, 2,450 ft. N of NW cor. M. Delano Sur. 68, 10,500 ft. E at right angles ..... Spudded and S.D.

POLK COUNTY

D. R. McCall's No. 1 Faulkner, 350 ft. W of center of E line of 300-ac. tract, G. B. Dikes Sur. ..... Drlg. shale 550 ft.
Dick Schwab's No. 1 Kirby & West, Geraldus Thomas Sur., 1,000 ft. N of N line of P. A. Sublett Sur., and 3,000 ft. W of E line of Thomas Sur. ..... Drlg. shale 4,820 ft.
C. E. Stewart's No. 1 Stephenson, E. Stevenson Sur. (Abst. 761), 1,633 ft. from N line, 920 ft. from W line of 217 acres ..... Rig.

REFUGIO COUNTY

C. B. Bunte et al's No. 1 F. B. Rooke, J. M. Aldritte Sur., CWL of Sec. 4 ..... Rigging.
Humble O. & R. Co.'s No. 10 O'Connor, Powers & Hewitson Sur., 15,133 ft. N of S line, 7,302 ft. W of E line, of J. Keating Sur. ..... Drlg. lime 1,253 ft.
Texas Co.'s No. 1 Rooke, J. M. Aldritte Sur., 7,500 ft. S 53 deg. W, 850 ft. 37 deg. W of N cor. Sur. .... Drlg. sandy shale 4,865 ft.
Wellington Oil Co.'s No. 1 Roach, R. J. Downey Sur., 1,250 ft. NW line, 515 ft. NE line of Tract No. 1.... Drlg. shale 1,820 ft.

SAN JACINTO COUNTY

Turnbull & Irwin's No. 1 J. J. West, J. Rankin Sur., center 25-ac. tract ..... Moving in material.

TRINITY COUNTY

T. M. Smith et al's No. 1 C. Moody, E. Roberts Sur., 552 ft. W of E line, 1,202 ft. N of S line, of 40-ac. tract ..... Drlg. clay 100 ft.

VICTORIA COUNTY

J. F. Camp's No. 1 Maurer, 330 ft. NE cor. Maurer's 178 acres, R. Manchola Sur. ..... D.S. test 2,189-95 ft.; 20 fourbles S.W.
Stoneleigh O. & G. Co.'s No. 1 Dietzel, 330 ft. out of NW cor. of Dietzel's 95-ac. tract, R. Manchola Sur.. Rigging.
Stoneleigh O. & G. Co.'s No. 3 E. B. Terrell, 330 ft. out of SE cor. of Terrell's 218-ac. tract, R. Manchola Sur. ..... Moving in derrick.
Stoneleigh O. & G. Co.'s No. 1 Trybble, 330 ft. out of SE cor. Trybbie's 122-ac. tract, R. Manchola Sur. .. Moving in derrick.
Stoneleigh O. & G. Co.'s No. 1 Zimmer, R. Manchola Sur., 1,007 ft. SW line, 645 ft. SE line ..... Drlg. shale 3,985 ft.
The Texas Co.'s No. 6-A McFaddin, 5,600 ft. from NE line, 250 ft. from SE line of A. J. Gray ..... Gas sand 3,039-49 ft.; pumping wtr. and mud into sand to kill pressure.
The Texas Co.'s No. 7 McFaddin, 6,600 ft. S 15 deg. W, 450 ft. N 75 deg. W at right angles from the NE cor. of the A. J. Gray Sur. ..... T.D. 1,178 ft; blowing gas and mud.
Texas Co.'s No. 7-A McFaddin, 250 ft. due N of No. 7, A. J. Gray Sur. ..... Drlg. clay 202 ft.
Texas Co.'s No. 8 McFaddin, A. J. Gray Sur., 6,600 ft. N of S line, 1,383 ft. from E line of NE cor. ..... Derrick.

WALKER COUNTY

McDowell et al's No. 1 Thompson, Jackson Crouch Sur., 330 ft. E of W line, 1,200 ft. S of N line .... Spudding.

WALLER COUNTY

Hobson & Moore's No. 1 Peters, Justo Liendo Sur., 590 ft. W of creek and 1,144 ft. N of S cor. ..... Drlg. shale 4,510 ft.

WHARTON COUNTY

Boggs & Hammond's No. 1 C. T. Kountze, Morris & Cummings Sur., 1,250 ft. S line, 2,750 ft. E line .... Drlg. shale 6,295 ft.
Monarch Oil Co.'s No. 1 Schateck, 150 ft. each way out of SW cor. G. W. Reynolds Sur. ..... Derrick.
Nabers et al's No. 1 Lurker, 210 ft. out of SE cor. of N½ SW Sec. 58, E.T.R.R. Sur. ..... Standing 5,026 ft.
Pure Oil Co.'s No. 1 W. Garrett, Sec. 28, 4,455 ft. SE, 1,690 ft. NE of W cor. ..... T.D. 6,343 ft.; standing.
Pure Oil Co.'s No. 1 A. J. Wilder, T. W. Hurd Sur., 509, 2,575 ft. SE, 1,690 ft. NE from W cor. of Sec. 28. Drlg. sand and shale 6,590 ft.
Pure Oil Co.'s No. 1 Stewart, 2,419 ft. NW, 1,650 ft. NE of S cor. of Sec. 26, Morris & Cummings Sur. ..... T.D. 8,067 ft.; set whipstock 7,391 ft.; fishing 5,464 ft.
Pure Oil Co.'s No. 1 Chas. T. Kuntze, 2,183 ft. from NW line, 467 ft. from SW line, Sec. 27, Morris & Cummings Sur. ..... Fishing 7,134 ft.; a show at 7,128-34 ft.
Pure Oil Co.'s No. 1 W. H. Lancaster, Morris & Cummings Sur., Sec. 23, 1,650 ft. NW, 1,600 ft. SW of E cor. of section ..... Drlg. shale 5,879 ft.
Pure Oil Co.'s No. 1 Willis McIntyre, 1,670 ft. S of N line, 1,759 ft. S of E line of section ..... Drlg. sand 5,382 ft.
Pure Oil Co.'s No. 1 Wallace Houston, 858 ft. SE of NW line and 1,690 ft. NE of SW line, Sec. 28, (T. W. Heard Sur.) ..... Drlg. shale 5,892 ft.
Pure Oil Co.'s No. 1 Isaac Weaver, J. M. Brownson Sur., Sec. 22, 1,650 ft. out of N cor. of section .... T.D. 6,181 ft.; standing.
Smith, McDannald and Pure Oil Co.'s No. 1 B. M. Yeamans, 330 ft. out of N cor. of B. M. Yeamans Sur., Abst. 913 ..... Tested S.W. at 6,196 ft; standing.
Smith & McDannald and Shell Pet. Corp.'s No. 1 Ridgeway, 1,980 ft. from S, 660 ft. from W of NE cor. Sec. 8, H.&T.C. Sur. ..... T.D. 7,607 ft · standing.

Wildcat Operations in Louisiana-Arkansas

(Continued from Page 48)

Arkansas

COLUMBIA COUNTY

C. W. Alworth et al's No. 1 W. D. King, SW cor. SE SW Sec. 16-17-20 ..... Cored S.W. 1,879 ft.; S.D.

JEFFERSON COUNTY

J. E. Elliott's No. 1 B. V. Nevin, 440 ft. N and E. SW cor. SW NW Sec. 26-4-10 ..... Rigging up.

HEMPSTEAD COUNTY

A. H. Bagnelle's No. 1 Trattner & Rhinehart, Sec. 2-13-26. Coring 1,100 ft.
Kentucky O. & G. Co.'s No. 1 Leslie, NW cor. SW NW Sec. 21-9-26 ..... Derrick.

LAFAYETTE COUNTY

George W. Harper's No. 2 Bodcaw, 150 ft. S, 550 ft. E NW cor. SW NW Sec. 16-16-22 ..... Drlg. plug 1,190 ft.; T.D. 1,198 ft.

LONOKE COUNTY

Joe D. Strahan's No. 1 Hardin, 300 ft. S and E. NW cor. NW NW Sec. 18-2s-7 ..... Rigged up and W.O.

MILLER COUNTY

Duluth-Ark. Oil Co.'s No. 2 Beck, 330 ft. S and E. NW cor. SE SW Sec. 34-15-26 ..... Set 6-in. 2,804 ft.; T.D. 2,807 ft.

OUACHITA COUNTY

F. G. Harrell's No. 1 Poindexter, 330 ft. S and E NW cor. Sec. 35-15-18 ..... Set 10-in. 103 ft.; drlg. 600 ft.
J. D. Reynolds' No. 1 Snow Hill Baptist Church, 525 ft. E, 115 ft. S, NW cor. SE SW Sec. 28-15-15... W.O.S.R. 1,969 ft.

POINSETT COUNTY

Ark. State O. & G. Co.'s No. 1 fee, C NE NE Sec. 13-11-3e ..... Derrick.

UNION COUNTY

E. R. Henderson's No. 1 J. H. Ogden, 330 ft. S and E. NW cor. SW SE Sec. 32-18-14 ..... Set 10-in. 107 ft.; drlg. 200 ft.
Chas. Steele's No. 1 J. B. Combs, 150 ft. N, 185 ft. W, SE cor. SW NW Sec. 25-18-16 ..... Rigging up.

WOODRUFF COUNTY

John Wadkins' No. 1 Rosser, Sec. 7-5n-2w ..... S.D. 1,300 ft.

Mississippi

JONES COUNTY

Snow-Black Pet. Co.'s No. 1 Watson, 600 ft. W, 210 ft. S, center, Sec. 24-7-13 ..... Junked and abd. 4,500 ft.

LAMAR COUNTY

Lamar Oil Co.'s No. 1 Scott, NE NE Sec. 18-3n-14..... S.D. 3,010 ft.

MADISON COUNTY

H. A. Wilson, tr.'s No. 1 Copex, 200 ft. N and E, SW cor. SW NE Sec. 24-9-3e ..... Reaming 1,815 ft.

NEWTON COUNTY

Bob Dalton et al's No. 2 Majura, SE SE Sec. 35-6-11 ... Drlg. 2,810 ft.

RANKIN COUNTY

Hill Bros. and Cleve Love's No. 1 Lancaster, C SW NW Sec. 27-5-5e ... Derrick.

WALTHALL COUNTY

Mutual O. & G. Co.'s No. 1 Boyd, Sec. 34-2n-9e, SW cor. SW SE ... Derrick.

WARREN COUNTY

Orbet Drlg. Co.'s No. 1 R. L. Parker, 300 ft. E. CWL, Sec. 14-14-1e ... Reaming 920 ft.

Louisiana-Arkansas Proven Areas

North Louisiana

BOSSIER PARISH

Company, well, farm name, section and block—	Remarks:
United Gas Public Service Co.'s No. 3 Skannel, Sec. 14-17-12	Drlg. plug 2,415 ft.; T.D. 2,474 ft.
United Gas Public Service Co.'s No. 1 Skannell unit, 1,317 ft. N, 1,274 ft. E. SW cor. Sec. 13-17-12	Location.

CADDO—BETHANY

N. 1,596 ft. E. SW cor. Sec. 17-16-16	
Tom Collins Pet. Co.'s No. 1 Gill & Lipscomb, 660 ft	Derrick

CADDO PARISH—BETHANY

Calatex O. & G. Co.'s No. 1 Taylor, SW SE Sec. 34-17-16.	Drlg. 2,540 ft.
Dillingham et al's No. 1 Eady est., 660 ft. S and W, NE cor. SE NE Sec. 33-16-16	Drlg. 1,624 ft.

CADDO—PINE ISLAND

Ark.-La.-Tex. O. & G. Co.'s No. 1 Simon, 330 ft. N and E. SW cor. NW Sec. 15-20-15	Set 12½-in. 41 ft.
M. Rodgers' No. 1 Muslow, 700 ft. S, 1,550 ft. W of center Sec. 4-20-15	Set 5 3/16-in. 1,213 ft.; drlg. 1,320 ft.

CADDO—HOSSTON

C. D. Whittaker et al's No. 2 Barker, 1,150 ft. N, 1,900 ft. E, SW cor. Sec. 21-22-15	S.D. 250 ft.

DE SOTO PARISH

Tom McKinney et al's No. 1 J. M. Nabors, 330 ft. N and E, SW cor. SE SE Sec. 26-12-12	Rig up.

LASALLE PARISH

H. L. Hunt, Inc.'s No. 7 Urania Lumber Co., 400 ft. S. 150 ft. W of C Sec. 2-9-1e	Set 7-in. 1,485 ft.; W.O.S.R. 1,510 ft.

RICHLAND PARISH

J. C. Prine's No. 1 Boughton, 1,360 ft. N, 1,920 ft. W. C Sec. 4-15-6	Drlg. 2,428 ft.

SABINE PARISH—ZWOLLE

Baird Bros.' No. 1 Trammell, 600 ft. N, 330 ft. W. SE cor. NE Sec. 30-8-11	W.O.S.R. 2,606 ft
Baird & Reed's No. 1 Dew, 330 ft. N, 210 ft. E, SW cor. SW SE Sec. 22-8-11	Dry and abd. 2,580 ft.
J. C. Chandler's No. 1 Rains, SW cor. NW Sec. 14-7-11	Running tubing; 300 ft. oil in hole, 2,508 ft.
Dyer et al's No. 1 McCollister, 330 ft. S and E, NW cor. SW NE Sec. 34-7-12	Derrick.
Investors Prod. Co.'s No. 1 S. J. Williams, 600 ft. E and S, NW cor. Sec. 24-7-11	Swbng. through 2½-in. tubing 2,665 ft.
Magnolia Pet. Co.'s No. 2 Gindratt, 330 ft. N, 320 ft. E, SW cor. SE Sec. 30-8-11	Derrick.
Pelican Nat. Gas Co.'s No. 25 La. Long Leaf, 584 ft. S, 300 ft. E, NW cor. NE NE Sec. 31-8-11	Rigging up.
Pelican Nat. Gas Co.'s No. 21 La. Long Leaf Lbr. Co., 660 ft. N, 548 ft. W, SE cor. SE SW Sec. 3-7-11	Dry; W.O. 2,706 ft.
Pelican Nat. Gas Co.'s No. 24 La. Long Leaf Lbr. Co., 330 ft. N and E, SW cor. Sec. 5-7-11	Bailed dry; W.O. 2,750 ft.
H. C. Pitts' No. 1 Trammell 330 ft. N and E, SW cor. NW NE Sec. 5-7-11	Derrick
Pugh-Hickman Drlg. Co.'s No. 9 Stills, Sec. 16-7-11, 330 ft. S and E, NW cor. SE NW	Dry and abd. 2,765 ft.
People's O. & G. Co.'s No. 1 Raines, 330 ft. N, 100 ft. W, SE cor. NE Sec. 15-7-11	Set 6-in. 2,431 ft.
Rig Oil Co.'s No. 1 Walden, 330 ft. N and E, SW cor. NW NE Sec. 28-8-11	Derrick.
C. T. Ruffin's No. 1 McNeely, 510 ft. S, 330 ft. W, NE cor. NE NE Sec. 7-7-11	Bailing 2,550 ft.
L. J. Tillery's No. 1 Sabine Lbr. Co., 800 ft. S, 220 ft. W, NE cor. Lot 3, La. Navy grant, Sec. 5-7-11	Rigged up and S.D.
C. H. Tuttle's No. 4 Byrd, 800 ft. S. 920 ft. E. NW cor. NW NW Sec. 7-7-10	Set 6-in. 2,438 ft.

UNION COUNTY

Southern Carbon Co.'s No. 63 fee, 660 ft. S. 660 ft. E of center Sec. 7-20-4e	Rigging up.

Mississippi

HINDS COUNTY

Hensley & Tanner's No. 1 Hudson, 1,300 ft. N, 1,500 ft. W, SE cor. Sec. 11-5-1e	Comp. 36,000,000 ft. of gas 2,407 ft.
B. B. Jones' No. 1 McRae, 580 ft. W, 540 ft. N, SE cor. SW NW Sec. 24-7n-1w	Location.
B. B. Jones' No. 1 Stone, 500 ft. S, 100 ft. E, NW cor. Sec. 18-5n-3e	Rigging up.
Love & Lancaster's No. 2 Elton plantation, NE Sec. 9-4-1e	S.D. 5 ft.
Meredith Trading Co.'s No. 1 Nelson et al, 630 ft. E. 330 ft. S, NW cor. SW SE Sec. 24-6-1e	Drlg. 540 ft.
United Gas Public Service Co.'s No. 1-C McLaurin, Sec. 19-6-2e, C SE	Junked and abd. 2,750 ft.

RANKIN COUNTY

Ferguson, Fuller & Metz' No. 1 Ammons, 350 ft. E and S, NW cor. NW NW Sec. 35-3n-3e	Rigged up.
Love Pet. Co.'s No. 2 fee, Sec. 31-6-2e, 325 ft. N, 25 ft. E of SW cor.	Set 6⅝-in. 2,344 ft.
Cleve Love et al's No. 1 Thomas, SW Sec. 10-4-1e	Drlg. 1,334 ft.
Muse & Muse's No. 1 Carlton, Sec. 13-5n-1e, 650 ft. E. 735 ft. N, SW cor.	Comp. est. 30,000,000 ft. gas 2,410 ft.

EAST TEXAS (Border Counties)

MARION COUNTY

Perry et al's No. 1 E. B. Colgin, 300 ft. N and E, SW cor. Martin Noll Sur.	S.D. 1,400 ft.

PANOLA COUNTY

W. H. Nichols et al's No. 1 S. W. Ray, 330 ft. S of N line, 330 ft. W of E line, W. P. Culver Sur.	Drlg. 575 ft.
M. H. Robbins et al's No. 1 Alice Williams, 165 ft. N and E, SW cor. 30-ac. tract in Winnie Mann Sur.	Rigging up.
C. R. Obermeyer et al's No. 1 T. J. Wooten, P. Martin Sur.	Drlg. 395 ft.

Wildcat Operations in Southwest Texas

(Continued from Page 51)

Fred Perrenot's No. 1 Ruiz, SE cor. of 82-ac. tract in F. Rowland (Rolen) Sur. No. 48	T.D. 849 ft.; standing.
Fred A. Perrenot's No. 1 Russell, 750 varas from NE line, 54 varas from NW line of 500-ac. tract in Rodriquez Sur.	T.D. 1,315 ft.; standing
H. A. Pagenkopf's No. 1 G. A. Gooth, 500 ft. from SE line, 600 ft. from SW line which is San Antonio River, Juan Montes Sur.	T.D. 2,010 ft.; fishing for 1 joint of liner.
Earl A. Post's No. 3 J. F. and F. X. Bilharta, 150 ft. from N and E lines of S 200 acres of 335-ac. tract in F. Boles Sur.	Moving in rig.
C. A. Smith's No. 1 Henry Lamb, 750 ft. from N and E lines of Lamb farm, in de la Garza grant	T.D. 671 ft.; drlg. shale.
F. E. Tegler's No. 1 Brackenridge, 578 ft. from S line, 2,384 ft. from W line of tract in Maria Gertrudis de Alanis Sur.	T.D. 1,320 ft.; drlg.

BLANCO COUNTY

Blanco Development Co.'s (McGee) No. 1 A. J. Dittmar, 1,320 ft. from S line, 150 ft. from W line of George Evans Sur. No. 58, 4 miles NW of Johnson City	T.D. 726 ft.; standing.
Isham et al's No. 1 Lester ranch, 300 varas from N and E lines of Antonio Bandrand Sur., 8 miles NE from Johnson City	T.D. 405 ft.; S.D.

CALDWELL COUNTY

Judge R. L. Batts' No. 2 Roebuck, 2,400 ft. from NE line, 1,200 ft. from SE line of tract in Arthur Swift Sur.	T.D. 2,330 ft.; abd. dry.
E. L. Hope and Joe Cole's No. 1 Mike August, 150 ft. from NE line, 165 ft. from NW line of tract	T.D. 1,961 ft.; S.D.

DE WITT COUNTY

C. B. Bunte, Inc.'s No. 1 Emil Buckhorn, SE cor. of 120-ac. tract in Andrew Lockhart Sur., 2 miles SW from Lindeneau	T.D. 3,318 ft.; coring for Pettus sand.
L. G. Wade's No. 1 fee, 6 mi. S from Yoakum, 520 ft. from NW line, 160 ft. from SW line of 35-ac. tract in Lavina Dunbar Sur.	T.D. 2,257 ft.; S.D.

DUVAL COUNTY

Al Buchanan et al's No. 1 Duval County Ranch Co., 1,650 ft. from E line, 990 ft. from S line of S½ of N½ of Sur. No. 206	T.D. 1,483 ft.; flowed 20 bbls. hrly.; filled 250 bbls.; shut in for storage; est. 500 bbls. hrly.
S. B. Cloyes' No. 1 Hagist, 3,630 ft. from E line, 2,310 ft. from S line of B.S.&F. Sur. No. 265	T.D. 1,400 ft.; testing show of oil and gas.
Eaton et al's No. 1 Herbst, 1,650 ft. from E line, 330 ft. from S line in S.A.&M.G. Sur. No 71	Standing.
O. W. Killam's No. 2 Wood-Welder, 3,658 ft. from S line, 900 ft. from W line of Sur. No. 102	T.D. 1,446 ft.; drlg.
S. S. & H. Oil Co.'s No. 1 Hunter, 330 ft. W of CEL of J. Poitevant Sur. No. 515	T.D. 3,200 ft.; abd.
W. A. Smith's No. 1 Holzapfel, west central part of lease in 900 ft. W of NE cor. of Sur. 344 and 150 ft. from N line of Sur. No. 42	T.D. 1,100 ft.; drlg.
Trinity Drillers' No. 1 Hagist, 1,650 ft. from E line, 2,310 ft. from E line of B.B.B.&C. Sur. No. 1	T.D. 161 ft.; S.D. for new wtr. line.
Whitting's No. 1 Duval County Ranch Co., 1,511 ft. from S line, 2,143 ft. from W line of Blk. 21 of Sur. No. 196	T.D. 1,423 ft.; waiting for wtr.

EDWARDS COUNTY

Love and Evans' No. 1 Steve Brown, 660 ft. from N and E lines of Sec. 66, G.W.T.&P.R.R. Sur., 15 miles W of Rock Springs	T.D. 2,637 ft.; S.D. for csg. to shut out wtr.

FRIO COUNTY

Amerada Pet. Corp.'s No. 1 Frank Doering, 34 ft. from W line, 1,700 ft. from S line of Tract No. 7 in Maria Louisa Carranza Sur. No. 302	T.D. 5,849 ft.; fishing for pipe.

GILLESPIE COUNTY

Powers et al's (Nixon-Dore) No. 1 Andrew Lindig, 18 mi. E of Fredericksburg	T.D. 1,194 ft.; fishing.

GONZALES COUNTY

Volz & Shelling's No. 1 Bennett Botts et al, 150 ft. from W line, 300 ft. from N line of 420-ac. tract, lease in Gonzales Sur.	T.D. 500 ft.; drlg.

GUADALUPE COUNTY

A. F. Barnhill's No. 3 F. A. Phullman, 1,300 ft. from N line, 153 ft. from E line of lease in L. Bollinger Sur.	Moving in rig.
O. W. Killam's No. 1 fee, 710 ft. from NE line, 658 ft. from NW line of 47.3-ac. tract in Green DeWitt Sur. No. 13	Derrick.
Clint Lanier's No. 1 L. D. Hill, 450 ft. from NW line, 1,450 ft. from NE line of George Allen Sur.	T.D. 610 ft.; dropped till work resumed.
L. E. Trout's No. 1 Mrs. M. McKee, 650 ft. from W and 150 ft. from N line of 239-ac. tract in Green Dewitt Sur., 4 miles SW from Darst Creek	Moving in rig.
W. J. Walton and H. H. Weinert's No. 1 Sorrell, 1,350 ft. from S line, 300 ft. from E line of Sorrell tract in Manuel Ximines Sur.	T.D. 2,654 ft.; drlg.

HIDALGO COUNTY

Carl & Johnston's No. 1 Doughty, 187 ft. from S and E lines of Lot 11, Blk. 5 of Subd. of Indios Ranch Sur. in N. Hidalgo	T.D. 3,040 ft.; dropped.
Chancellor & Hall's No. 1 Garcia Land & Cattle Co., 150 ft. from W line of Porcion 42 and 150 ft. N of old Military Highway	T.D. 3,187 ft.; dropped.
Maxwell & Young's No. 1 King, 175 ft. from N and E lines of Lot 4, Blk. 16, Alamo tract	T.D. 875 ft.; dropped.

JACKSON COUNTY

Ed Parson et al's No. 1 Clark, 300 ft. from S and W lines of R. J. and M. Clark lease in A. S. White Sur.	Derrick.

JIM HOGG COUNTY

D. C. DeWitt's No. 1 A. G. Lopez, 3,475 ft. from W line, 435 ft. from N line of Sur. No. 106	T.D. 2,510 ft.; fishing.
Brooklyn Oil Co.'s No. 1 De La Garza, 660 ft. from N and W lines of Blk. 87 of Pippins Subd. of Randado Grant Sur.	T.D. 1,980 ft.; drlg.

KARNES COUNTY

Arrowhead Drlg. Co.'s No. 1 Rudd, 1,320 ft. from S and E lines of 524-ac. tract in Adriance Sur.	T.D. 1,100 ft.; drlg.

KENDALL COUNTY

E. W. Martin's No. 1 Houston, in F. Wright Sur.	T.D. 1,987 ft.; dropped till work resumes.
W. E. Waldrip's No. 1 Charles Meckel, 300 ft. from E line, 2,300 ft. from S line of Thos. J. Sweeney Sur. No. 10	T.D. 258 ft.; drlg.

KERR COUNTY

J. E. Anderson's No. 1 J. D. Witt, 1,320 ft. from N line, 1,320 ft. from W line of Sec. 1,923, in Hamilton Sur., 4 miles S of Center Point	T.D. 1,885 ft.; standing in shale and sand
Evans & Gant's No. 1 Love, 660 ft. S of S line of Sur. 1,597, 1,320 ft. from W line of Sur. 1,594	T.D. 4,060 ft.; rigging up to deepen.
Van Duyn & Moore's No. 1 Nowlin, 2,000 ft. from E line, 2,200 ft. from N line of Jas. R. Bettner Sur. No 99	T.D. 1,035 ft.; standing.

LA SALLE COUNTY

W. H. Wallace's No. 1 H. C. Yeager, 150 ft. from S and E lines of Sur. No. 95	T.D. 1,650 ft.; drlg.

LIVE OAK COUNTY

J. H. Durbin's No. 2 Marbach, 1,000 ft. from S line, 3,200 ft. from W line of S. Hays Sur.	T.D. 904 ft.; waiting on orders; showed wtr. when drilling in.
M. P. Howard's No. 1 Alexander, 2,700 ft. from N line, 150 ft. from E line of 500-ac. tract, 3 miles NE of Calliham	T.D. 1,323 ft.; cmt. failed to hold; preparing to pull csg.
Ike Taylor's No. 1 J. W. Gomillion, on farm No. 6, ½ mile NE from Loma's No. 1 Griffith	T.D. 300 ft.; drlg.

McMULLEN COUNTY

Nixon & Foster's (C. B. Bunte) No. 1 Lowe, 1,320 ft. from NE line, 1,320 ft. from NW line, Sec. 152, A. Starr Sur.	T.D. 1,900 ft.; drlg.

Paul C. Teas' No. 2 Hagist, 330 ft. from N and W lines of Sec. 19 ..... Rigged up.
Paul C. Teas' No. 1 Hagist, 330 ft. from N and E lines of Sec. 181, 10 miles N from Government Wells.... T.D. 1,832 ft.; drlg.
Paul C. Teas' No. 2 Hagist, 330 ft. from N and W lines of Sec. 25, Blk. 5, of H.&T.C.R.R. Sur. ..... T.D. 1,400 ft.; drlg.

MEDINA COUNTY

O. R. Framme's No. 1 E. Boelke, 987 ft. from N line, 600 ft. from E line of 102-ac. tract in S. Huth Sur. No. 19 ..... Spudding in.

MILAM COUNTY

Ed Clark et al's No. 1 Thomas Graves, 350 ft. from SW and NW lines of Jackson Hall Sur. ..... T.D. 890 ft.; shut down in shale
R. McCormick's No. 1 R. H. Humber, 37.5 acres, 150 ft. from SE and SW lines of tract in James McLaughlin Sur. ..... T.D. 550 ft.; drlg.

NUECES COUNTY

Banquette Oil Co.'s No. 1 T. C. Ingram, 330 ft. from N and W lines of 80-ac. tract, Blk. 6, Sec. 7, of S. R. Peters Sur. ..... T.D. 3,475 ft.; drlg.
A. C. Erwin's No. 1 Sagarin, 520 ft. from N, 160 ft. from E line of 35-ac. tract in Sec. 4, H. L. Kenney Sur. ..... T.D. 4,408 ft.; drlg.
S. F. Huribut and Southwest Oil Co.'s No. 1 Poenisaheh, center Blk. 2, Sec. 32, Flowerbluff & Encinal farm, 8 miles S from Corpus Christi ..... T.D. 2,300 ft.; drlg.; showing little oil at 1,971 ft. and 2,093 ft.
Texon Royalty Co.'s No. 1 E. McCoy, 330 ft. from W line, 3,830 ft. from S line, Sec. 3, of Palo Alto Sur., 6 miles SE from Agua Dulce ..... T.D. 4,450 ft.; drlg.

STARR COUNTY

Accumulative Royalty Co.'s No. 1 Martinez, 800 ft. from S line, 500 ft. from W line of C.C.S.D.&R. G.N.G. Sur. No. 217 ..... Laying wtr. line.
B.&B. Oil Co.'s No. 1 Crown Brick & Tile Co., 1,800 ft S of State Highway No. 4 and 550 ft. from W line of Porcion 87, near La Puerta ..... T.D. 4,560 ft.; dropped till work starts.
Great Plains Oil Co.'s No. 1 Sanchez, 660 ft. from W line, 330 ft. from S line of SE NW of Sur. No. 344 .. T.D. 2,350 ft.; standing.
Goodwin & Yantis' No. 1 Kelsey Bass, 150 ft. from S and E lines of Blk. 8, Coast O. & G. Subd. of Secs. 2 and 3, Porcions 86-87 ..... T.D. 1,040 ft.; standing.
Goodwin & Yantis' No. 1 Seabury, 150 ft. from S and W lines of Sec. 107, Share No. 1, Porcion No. 107.... T.D. 2,095 ft.; no report.
Goodwin and Yantis' No. 2 Walker, 3,000 ft. from S line, 2,000 ft. from W line of Sur. No. 767 ..... T.D. 1,750 ft.; drlg.
Myers, Sullivan & Jenkins' No. 1 Starr County Cattle Co., 330 ft. from N line, 330 ft. from W line, Blk. 62, Porcion 89, Share 60 ..... T.D. 1,410 ft.; drlg.
R. D. Perkins & Hoffman's No. 1 E. A. Peffler, 3,090 ft. from W line, 2,480 ft. from S line of Sur. 933.. T.D. 80 ft.; standing.

TRAVIS COUNTY

Franklin et al's No. 1-A Reimers, 1,200 ft. from SE line, 1,800 ft. from most southerly SW line of Sur. No. 25 ..... T.D. 710 ft.; drlg.
Fritz Fuch's No. 2-B Smith est., 900 ft. from NW line, 300 ft. from W line of Blk. 16, L. Kimbro Sur. .... Rigged up and standing.
Weaver & Osborn's No. 1 Will Reinhardt, 300 ft. from NW line, 1,200 ft. from NE line of Will Reinhardt 109-ac. tract in William Lewis, Jr., Sur. 2.... T.D. 248 ft.; standing.

UVALDE COUNTY

Evans & Thompson's No. 1 Farris, 400 ft. from S and W lines of 535-ac. tract near center of John J. Hammond Sur. ..... T.D. 460 ft.; dropped from report till work resumed.
John Roberts' No. 3 Kincaid ..... T.D. 385 ft.; standing.
O. A. Payte, No. 1 H. M. Waldrip, 160 ft. from S and W lines of G. Traute Sur. No. 471 ..... T.D. 1,040 ft.; dropped from report.

WEBB COUNTY

Merle Gunby's No. 1 A. M. Bruni, 1,252 ft. from W line, 328 ft. from S line of Sur. No. 857 ..... T.D. 2,630 ft.; drlg.
Will Ohlhausen's No. 1 Moses Jones, 375 varas from E line, 516 varas from S line of 100-ac. tract in Sur. No. 1,640 ..... T.D. 850 ft.; standing.

WILLIAMSON COUNTY

Alexander Drlg. Co.'s No. 1 J. & G. Kreig ..... T.D. 1,550 ft.; fishing.
Humble O. & R. Co.'s No. 1 Burns est., 825 varas from NW line, 1,495 varas from SW line of J. West Sur... T.D. 598 ft.; drlg.
McLean et al's No. 2 R. C. Miller, 800 ft. to S line, 100 ft. to W line of tract, B. Manlove Sur. ..... T.D. 2,265 ft.; standing.
Pederson's No. 4 Forwood, 900 ft. from N and 1,200 ft. from E line of 160-ac. tract in Fisher Sur. ..... T.D. 652 ft.; standing.
Wilson, Worley & Moore's No. 1 Mrs. M. M. Olive ..... T.D. 1,770 ft.; S.D.

ZAPATA COUNTY

J. C. Charver's No. 1 Bustamente, 330 ft. from N and E lines of 24-ac. tract in Share 24 of Las Comitas grant ..... T.D. 1,290 ft.; drlg.
Circle W. Oil Co.'s No. 1 M. Garza est., 623 ft. from NW line and 699 ft. from SW line of Blk. 30, C. A. Douglas Subd. of Charco de la India grant ..... T.D. 1,435 ft.; drlg.
J. P. Doyle's No. 1 I. Ramirez, 150 ft. from NW and SW lines of Blk. 15, Share 1, Porcion 18 ..... Spudded in and S.D.
Sarah Poppas' No. 1 Juan V. Cueller, Jr., 150 ft. from NE and SE lines of Blk. 8, Sur. 2 of Poppas Subd. of Por. 84 ..... T.D. 770 ft.; standing.
A. C. Savoy et al's No. 1 Flores, 150 ft. from NW line, 206 ft. from NE line of Blk. 9, Share 1 of P. A. Richer Subd. of Porcion No. 38 ..... T.D. 2,404 ft.; standing.

ZAVALA COUNTY

Anglin O. & G. Co.'s No. 6 Pryor ..... T.D. 1,104 ft.; in Serpentine.
Zavala O. & G. Co.'s No. 1 Gates, 1,320 ft. from N line, 1,320 ft. from E line of Hooper & Wade Sur. No. 13.. T.D. 6,054 ft; hole cleared; standing.

Southwest Texas Proven Areas

Week Ending October 28

CEDAR CREEK POOL—BASTROP COUNTY

Marts & Beavens' No. 1 C. A. Smith, 700 varas from SE line, 1,150 varas from NE line of C. A. Smith 415-ac. tract in James Bialock Sur. No. 7 ..... T.D. 1,518 ft.; in Serpentine 18 ft.; coring.
Marts & Beavens' No. 2 Orgain, 450 ft. from NW line, 150 ft. from NE line of Mrs. B. D. Orgain's 207.75-ac. tract in Addison Litton Sur. No. 1 ..... T.D. 1,711 ft.; comp. 200 bbls.
Joe Mills' No. 2 Voss, 100 ft. from NW and SW lines of Sallie A. Voss' 73.24-ac. tract in Addison Litton Sur. ..... T.D. 1,849 ft.; abd.; S.W.

NORTH DALE POOL—BASTROP COUNTY

Marts & Beavens' No. 4 C. L. Riddle, 2,200 ft. from SW line, 200 ft. from NW line of John Maxmillian Sur. No. 22 ..... T.D. 225 ft.; drlg.
Marts & Beavens' No. 3 Riddle, 685 ft. from NW line, 2,075 ft. from SW line of John Maxmillian Sur. .... T.D. 2,125 ft.; comp.; flowed 1,000 bbls. first 12 hrs.
Ogden & Reed's No. 1 Spradlin, 300 ft. from S line, 200 ft. from E line of 113-ac. tract in Grey Sur. .. Rigged up; standing.
Ogden & Reed's No. 3 Riddle, from S cor. of Joshua Gray Sur. NE along SE line 760 ft. thence NW 150 ft. at right angles in Joshua Gray Sur. ..... T.D. 2,266 ft.; tested S.W.; P.B. to 2,220 ft.

ECKERT POOL—BEXAR COUNTY

I. F. Harrison's No. 1 F. Gembler, 150 ft. from NW line, 460 ft. from NE line of 88-ac. tract in J. Montez Sur. ..... T.D. 675 ft.; standing.
Swearingen Oil Co.'s No. 14 Halbardier, 700 ft. N of No. 3 on 93-ac. tract ..... T.D. 712 ft.; comp. 12 bbls.

NORTH DALE—CALDWELL COUNTY

Witherspoon Oil Co.'s No. 1 J. W. Mears, 330 ft. from SW line, 850 ft. from SE line of Wm. Leach Sur. .. Rigged up.

WEBSTER POOL—CALDWELL COUNTY

C. J. Webster Oil & Gas Co.'s No. 1 Fulps, 150 ft. from E line, 225 ft. from S line of tract in John A. Neill Sur. ..... T.D. 2,395 ft.; abd.

BUCHANAN POOL—DUVAL COUNTY

R. D. Kelly's No. 1 Foster, 330 ft. from N line, 1,650 ft. from E line of S½ of Sur. No. 206 ..... Rigging up.

ECKERT POOL—DUVAL COUNTY

F. H. Eckert & Son's No. 2 Louis Brehm, 550 ft. from W line, 150 ft. from S line of 93-ac. tract in P. L. Buguor Sur. ..... Spudding in; the test previously reported as a completion should have been No. 12 instead of No. 8.

ESCOBAS POOL—DUVAL COUNTY

Texas Co.'s No. 41 Whitehead, 2,562 ft. from SE line, 20,431 ft. from SW line of Cerrito Blanco grant .... Rigging up.
United Prod. Co.'s No. 2 Cuellar, 150 ft. from S and W lines of NW of Sur. No. 285 ..... Rigging up.

NORTH KOHLER POOL—DUVAL COUNTY

Highland and Shasta's No. 2-D Peters, 660 ft. W of No. 1-D Peters, or 1,650 ft. from E line, 330 ft. from N line of Strip Sur. No. 65 ..... Rigging up.

NORTH GOVERNMENT WELLS POOL—DUVAL COUNTY

Central Producers' No. 8 Tuck-Johnson, 330 ft. from N and W lines of NW NW of Sur. No. 44 ..... Spudded in.
Rodney DeLange's No. 1 Lundell, 330 ft. from S line, 150 ft. from E line of SW of Sur. No. 60 ..... T.D. 2,200 ft.; showing oil; setting csg.
Hamill & Hamill's No. 8 C. W. Hahl, 330 ft. from S line, 990 ft. from W line of N½ of SE of Sur. No. 42 ..... T.D. 2,296 ft.; comp. 10 bbls. hrly.
Humble Oil & Ref. Co.'s No. 17 Hahl, 1,650 ft. from S line, 990 ft. from W line of E½ of Sur. No. 360 .. T.D. 2,315 ft.; swbng.
Humble O. & R. Co.'s No. 18 C. W. Hahl, 2,990 ft. from S line, 990 ft. from W line of E½ of Sur. No. 360.. T.D. 2,325 ft.; running tubing.
Humble O. & R. Co.'s No. 21 C. W. Hahl, 5,030 ft. from S line, 990 ft. from W line of E½ of Sur. No. 360.. T.D. 2,300 ft.; on sand; set csg.; W.O.C.
Kot Oil Co.'s No. 1 Lundell, 150 ft. from S and E lines of S½ of NW, Sur. No. 48 ..... T.D. 2,230 ft.; drlg.
Magnolia Pet. Co.'s No. 7 Allen, 330 ft. from N line, 990 ft. from E line of S½ of SE Sur. No. 42 ..... T.D. 2,276 ft.; set csg.; W.O.C.
Magnolia Pet. Co.'s No. 3 Duval Ranch Co., 660 ft. W of No. 1 on 640-ac. tract in Poitevent Sur. ..... T.D. 2,294 ft.; comp. 30 bbls. hrly.
Magnolia Pet. Co.'s No. 4 Duval Ranch Co., 1,650 ft. from W line, 330 ft. from S line in Sur. No. 208.... T.D. 2,312 ft.; testing.
Magnolia Pet. Co.'s No. 5 Duval County Ranch Co., 330 ft. from S line, 2,310 ft. from W line of Sur. No. 208.. T.D. 2,292 ft.; set csg.; W.O.C.
Magnolia Pet. Co.'s No. 6 Duval County Ranch Co., 330 ft. from S and E lines of Sur. No. 208 ..... Derrick.
Magnolia Pet. Co.'s No. 8 J. V. Allen, 1,650 ft. from E line, 990 ft. from S line of S½ SE of Sur. No. 42.... T.D. 1,675 ft.; drlg.
Navarro Oil Co.'s No. 32 Hahl, 330 ft. from N line, 990 ft. from W line of W½ of Sur. No. 360 ..... T.D. 2,284 ft.; set csg.; W.O.C.
Navarro Oil Co.'s No. 11 Hahl, 330 ft. from N and W lines of W½ of Sur. No. 360 ..... T.D. 2,305 ft.; testing.
Navarro Oil Co.'s No. 24 Hahl, 990 ft. from N and E lines of W½ of Sur. No. 360 ..... T.D. 2,316 ft.; running tubing.
Navarro Oil Co.'s No. 26 Hahl, 990 ft. from S and W lines of W½ of Sur. No. 360 ..... T.D. 2,244 ft.; set csg.; W.O.C.
Navarro Oil Co.'s No. 30 Hahl, 1,650 ft. from N line, 990 ft. from W line of W½ of Sur. No. 360 ..... T.D. 2,287 ft.; coring.
Reynosa Oil Corp.'s No. 4-B Duval Ranch Co., 330 ft. from S and E lines of E½ of SE, Sur. No. 363 ..... T.D. 1,000 ft.; waiting for wtr.
Rust Pet. Co.'s No. 2 Riley, 330 ft. from N and E lines of SW NW of 40-ac. tract in Sec. 46 ..... T.D. 1,590 ft.; topped Cole sand.
Russ Oil Co.'s No. 3-A C. W. Hahl, 330 ft. from N and W lines of NE SW of Sur. No. 46 ..... Rigging up.
Sun Oil Co.'s No. 12 Weiderkehr, 990 ft. from E line, 330 ft. from N line of Sur. No. 361 ..... Location.
Sun Oil Co.'s No. 7 Weiderkehr, 330 ft. from N and W lines of Sur. No. 359 ..... T.D. 800 ft.; drlg.
Sun Oil Co.'s No. 8 Weiderkehr, 1,650 ft. from N line, 330 ft. from E line in Sur. No. 359 ..... Rigging up.
Sun Oil Co.'s No. 10 Weiderkehr, 990 ft. from N line, 330 ft. from E line in Sur. 361 ..... Rigging up.
Texas Co.'s No. 6 W. C. Riggs, 330 ft. from S and W lines of E½ NW of Sur. No. 46 ..... Derrick.

SOUTH GOVERNMENT WELLS POOL—DUVAL COUNTY

Humble O. & R. Co.'s No. 12 Paul White, 1,650 ft. from S and E lines of Sur. No. 249 ..... T.D. 1,190 ft.; drlg. shale.
Humble Oil & Refining Co.'s No. 11 Paul White, 1,310 ft. from E line, 1,000 ft. from S line of Sur. No. 249.. T.D. 2,285 ft.; comp. initial gauge 20 bbls. in 3 hrs. on ¾-in. choke.

PETERS POOL—DUVAL COUNTY

Shasta Oil Co.'s No. 4 Peters, 990 ft. from E line, 330 ft. from S line of Strip, Sec. 65 ..... T.D. 2,494 ft.; abd.

NEW BERLIN POOL—GUADALUPE COUNTY

J. A. Harper's No. 2 Rosenbrook, 660 ft. SW of No. 1.. T.D. 225 ft; set 10-in. csg.; W.O.C.

JACOBS POOL—McMULLEN COUNTY

Loma Oil Co.'s No. 19-A Jacobs, 930 ft. SE of No. 17-A, in G.H.&H. Sur. No. 7 ..... T.D. 936 ft.; set csg.; W.O.C.
Loma Oil Co.'s No. 18-A Jacobs, 660 ft. S of No. 11, in W. H. Jacobs Sur. No. 8 ..... Derrick.
Longhorn Oil Co.'s No. 1-A Lark, 450 ft. from N line, 150 ft. from W line of Blk. 14, of Subd. of Lark land in E. W. B. Scrugham Sur. ..... T.D. 1,030 ft.; flowing oil.
Kennon & Stephenson's No. 1 Lark, 150 ft. from N and W lines of Blk. 15, subd. of Lark land in E. W. B. Scrugham Sur. ..... T.D. 1,033 ft.; set csg.; W.O.C.
J. S. Suttle's No. 1 Lark, 150 ft. from N and W lines of Blk. 16, in E. W. B. Scrugham Sur. ..... T.D. 1,048 ft.; running tubing; est. 30 bbls. daily.

AGUA DULCE FIELD—NUECES COUNTY

H. F. Grimm's No. 1 Bluntzer, 300 ft. from W line, 2,100 ft. from S line of 639-ac. tract in Elliff Sur. .. Location.

CUEVITAS POOL—STARR COUNTY

Mims, Hamill & Evans' No. 1 M. Guerra, 330 ft. from E line, 330 ft. from S line of Share M-10, in Las Cuevitas grant ..... Location.
Sun Oil Co.'s No. 1-D Guerra, 6,353 ft. from NE line, 3,300 ft. from SE line of La Sacatosa grant ..... Rigging up.
Sun Oil Co.'s No. 2-C M. Guerra, 2,009 ft. from NW line, 660 ft. from NE line in Sacatosa grant ..... T.D. 2,150 ft.; coring for sand.

CAROLINA-TEXAS POOL—WEBB COUNTY

Carolina-Texas Oil & Gas Trust's No. 11 Benavides, 150 ft. from S line, 600 ft. from W line of Blk. 12 in Sur. No. 683 ..... Rigging up; (first reported as Washington-Texas O. & G. Co.)
Washington-Texas O. & G. Co.'s No. 2 R. O. Barnsley, 150 ft. from E line, 450 ft. from N line of Blk. 16, Sur. 368 ..... T.D. 2,020 ft.; set csg.

MOCA POOL—WEBB COUNTY

D. R. Semmes' No. 4 Duval Ranch Co., 510 ft. from N line, 1,690 ft. from E line, Blk. 22, Share 3, Zapata School Land Sur. ..... T.D. 859 ft.; running tubing; flowing oil and wtr. and then gas; later mostly oil.

ESCOBAS POOL—ZAPATA COUNTY

S. R. & C. Oil Corp.'s No. 2-C Trevino, 330 ft. from S line, 330 ft. from W line of N½ of Blk. 12, in Sur. No. 412 ..... Location.
Texas Co.'s No. 43 Whitehead, 1,722 ft. from SE line, 19,507 ft. from SW line of Cerrito Blanco grant ... T.D. 1,208 ft.; testing.

JENNINGS POOL—ZAPATA COUNTY

United Prod. Corp.'s No. 11 Measles, 2,483 ft. from NW line, 16,580 ft. from SW line of Cerrito Blanco grant ..... T.D. 2,930 ft.; coring.

FIELD PROBLEMS FROM READERS

Edited by Thomas F. Smiley

This department is conducted in order that men connected with the drilling, producing and transporting branches of the petroleum industry may obtain aid in solving problems that confront them in their work. Readers are invited to send questions freely. These questions will be placed in the hands of persons capable of answering them authoritatively, and the answers, based on the best available information, will be published.

Each question should give as much detail as possible, especially if it involves depth of sands, types of sands and operations on adjoining or nearby properties. The source of questions will be considered confidential, and only the initials of the sender will be published. Questions involving patented processes, intricate formulas or estimates of cost cannot be answered. If an immediate answer is important, one will be given by mail when the writer requests it.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or improved old ones.

No Gas Actually Conforms With Boyle's Law Say Engineers

Your reply to the question of R. U. K. in the issue of August 24, 1933, was of interest to me. I would like to ask for more information along the same line. You quote a Bureau of Mines report to the effect that Boyle's law, which says that at constant temperature the volume occupied by a gas is inversely proportional to the absolute pressure, is not strictly applicable to natural gas. Is it strictly applicable to any gas? Is there any way of determining the degree of divergence from the law in any case? How is this divergence expressed?—F. N. E.

No gas conforms with Boyle's law precisely, according to T. W. Johnson and W. B. Berwald, Bureau of Mines engineers, in their report on an investigation into the operation of this law. They point out that the volume occupied by a definite quantity of gas depends upon the absolute pressure and temperature to which it is subjected. If the temperature is constant, changes in volume may be considered only in terms of pressure. A relationship between volume and pressure is expressed by Boyle's law.

"The mathematical expression of this law," says the report, "is

$$PV = P_1V_1 = K_1$$

where V is the volume at pressure P, and V_1 is the volume at pressure P_1; or, the pressure multiplied by the volume is equal to a constant.

"An imaginary gas which conforms to Boyle's law is considered an ideal gas. Many common gases conform approximately to Boyle's law at ordinary ranges of pressure and temperature, but no real gas follows it exactly.

"This investigation was confined to natural gas under pressures up to 1,000 pounds per square inch and at temperatures ranging from 40° to 80° F. Within these ranges of pressure and temperature, natural gas with an increase in pressure is more compressible; and, conversely, with a decrease in pressure is more expansible than the ideal gas. For example, at a constant temperature, 2 cubic feet of the ideal gas, measured at 75 pounds per square inch absolute pressure, according to Boyle's law will expand into a space of 10 cubic feet if the pressure is reduced to 15 pounds per square inch absolute; that is, $PV = P_1V_1$, or $2 \times 75 = 15 \times V_1$ or $V_1 = 10$.

"The data obtained on the natural gases used in this report show that if 2 cubic feet of natural gas, measured at 75 pounds per square inch absolute pressure, are allowed to expand to an absolute pressure of 15 pounds per square inch the gas will occupy a volume somewhat greater than 10 cubic feet.

"The relationship, at constant temperature, between the pressure and volume of a gas is known as the compressibility. The departure of the actual pressure-volume relationship from the pressure-volume relationship as expressed by Boyle's law is called the 'deviation from Boyle's law.' This deviation may be expressed in several ways. For the purpose of this report, the measured volume obtained by reducing the pressure of a definite volume of gas to some standard pressure, minus the volume at the same standard pressure computed by Boyle's law from the same initial pressure, divided by the latter, gives the deviation from Boyle's law, which may be expressed either as a percentage or decimal. To obtain the true value of the pressure times volume (P_1V_1) at the standard pressure (P_1) the product of pressure times volume at the given initial conditions (PV) is multiplied by a deviation factor of

$$1 + \frac{n}{100},$$

where n is the percentage deviation at pressure P, letting the value of n at P_1 equal zero.

"Computations from data obtained on the natural gases included in this report, with P always greater than P_1, gave positive values of n; that is, the value of

$$1 + \frac{n}{100},$$

was always greater than 1. Theoretical discussion of the behavior of gases, or of the causes for departure of gases from the ideal gas laws, is not included in this report."

Marginal Well Not Always One at Edge of the Oil Structure

I am confused by the expression "marginal wells." I always supposed a marginal well was one near the edge of the producing area, but it seems to have a meaning that has something to do with the amount of the production and not referring to the location of the well on the structure at all. Can you make this clear to me?—N. E. Y.

The oil conservation laws of Texas have officially introduced a use of the term "marginal well" which as you say has nothing to do with the location of the well on the structure, that is, its nearness to the margin of the pool. Perhaps the best way to clear up the point which is confusing to you is to quote that part of the Texas law referring to marginal wells. The following is found in Article 6049b:

"Section 1. The term 'marginal well' as used herein means a pumping oil well producing such daily quantities of oil as herein set out as would be damaged, or result in a loss of the production ultimately recoverable, or cause the premature abandonment of same, if its daily production were artificially curtailed. The following described wells shall be deemed 'marginal wells' in this State:

"(a) Any pumping oil well within this State having a daily production of 10 bbls. or less, averaged over the preceding 30 consecutive days, producing from a depth of 2,000 feet or less;

"(b) Any pumping oil well within this State having a daily production of 20 bbls. or less, averaged over the preceding 30 consecutive days, producing from a horizon deeper than 2,000 feet and less in depth than 3,500 feet.

"(c)) Any pumping oil well within this State having a daily production of 40 bbls. or less, averaged over the preceding 30 consecutive days, producing from a horizon deeper than 3,500 feet.

Sec. 2. To artificially curtail the production of any 'marginal well' below the marginal limit as set out above prior to its ultimate plugging and abandonment is hereby declared to be waste, and no rule or order of the Railroad Commission of Texas, or other constituted legal authority, shall be entered requiring restriction of the production of any 'marginal well' as herein defined."

Three Ways of Reviving Depleted Petroleum Fields Described

I would like to know the different ways that have been invented for going back to old oil fields where the production has gone so low that it isn't profitable any more and putting them on a paying basis again. I would like to know a little about each one of these methods.—E.W.O.

This subject was discussed interestingly in a paper which K. B. Nowels, chief petroleum engineer of the Forest Oil Corp., presented before the World Petroleum Congress in London in July, 1933. You doubtless would be interested in the complete paper, from which the following is quoted:

"Up to the present time petroleum technology has developed for use three artificial methods for the rejuvenation of oil fields. These are: Repressuring the oil sand with gas, air or with water, the latter being known as the forced drive or water flooding system. All these methods employ the fundamental process of restoring in some manner the depleted energy which once existed in the oil sand and was responsible for the natural production of oil. In the case of water flooding, the first application was accidental and accomplished by natural forces. When the beneficial effects were later discovered, improvement and development of the method began.

"Accidental repressuring of oil sands and their consequent rejuvenation has also taken place, but in such cases the artificial application of air or gas was previously known of, and in use, probably the most noteworthy example of accidental repressuring of an oil sand by gas, where high pressure gas from another horizon gained entrance to the oil sand through casing leaks or around imperfect casing seats, was in the Lyons-Quinn Field of Oklahoma. M. J. Kirwan has described this and states that the oil production of some of the leases was temporarily increased over 100 per cent within a few days after the gas entered the sand. It was conservatively estimated that 1,444,000,000 feet of gas entered the productive oil sand, and caused an increase of about 950,000 bbls. of oil from this sand.

"In many oil fields at the present time rejuvenation is being accomplished in an artificial manner by the introduction of either natural gas or air under pressure through input wells into the producing oil sand. In some cases the introduction of high-pressure gas is made before the oil field has declined in production to the point where artificial restoration is usually attempted. A notable example of such practice is in the Sugarland oil field near Houston, Tex. Most repressuring projects have been successful to some degree and these methods will undoubtedly continue to be used.

"The rejuvenation of an oil sand by water flooding, either in a natural or artificial way, has not been so common. So far as known, there is only one district in the world where such flooding has been carried on successfully and in a large scale manner; that is the Bradford oil field in McKean County, Pennsylvania, and the Richburg Field of Allegany County, New York, 10 miles distant. Water flood rejuvenation in these fields has completely revived a decadent industry in this locality, has materially increased land values and given guarantee to a long-lived field operation."

Why Was It Called That?

HARD TIMES

"Hard times," the term commonly used to designate periods of economic delirium such as the one from which the oil industry along with the world in general is emerging, comes from two English words, "hard," meaning hard, and "times," meaning times. There is nothing new about hard times. Back in 450 B.C. things were so bad in Assyria that a bushel of dates cost half a shekel, as compared with the normal price of one shekel for four bushels. An Assyrian of that day desiring to buy a new chariot and without the cash to pay for it, was charged 40 per cent interest yearly if he got it on the installment plan. These facts have been brought to light by W. H. Dobberstein, archeologist of the American Oriental Society, who has been deciphering inscriptions on clay tablets.

NATURAL GAS DEVELOPMENTS

Northern Pennsylvania and New York Gas Tests

WELLSBORO, Pa., Oct. 28.—Penn United Gas Co. is drilling below 4,490 feet on the J. Locey, a test of the Wellsboro anticline in Charlestown Township. The top of the Tully lime was 4,267 feet and the bottom at 4,357 feet. This company has moved in on a location on the George Stevens, Farmington Township.

In Potter County, Rodgers and others are drilling at 3,975 feet on the Scott, Hebron Township; Tioga Natural Gas Co. is drilling at 2,730 feet on the property of the First National Bank of Emporium, Shippen Township; Atlantic Seaboard Co. finished at 5,000 feet in its well on the Haywood estate, Hamlin Township. Hanley & Bird are drilling at 4,460 feet on the S. Gooch, Hebron Township.

East Penn Development Co. is drilling at 2,263 feet on the Emporium Lumber Co.'s tract in the East Fork district. Potter Development Co. is drilling at 1,652 feet on the Gray Chemical Co.'s land in Clara Township. Sylvania Corp. is rigging up on the J. Higley, Hebron.

In New York State, Geneva Natural Gas Co. has abandoned a dry hole, depth 2,967 feet, on the Pat O'Connor, Phelps Township, Ontario County. Mid-East Corp. is drilling at 2,250 feet on the N. Reubenstein, Briston Township, same county. J. B. Reed and others are drilling at 4,400 feet on Quinlin Oil Co.'s property at Olean. Tom Boise is drilling at 2,741 feet on the No. 2 Harper location, Galen Township, Wayne County. Peterman and others are fishing at 400 feet on the W. H. Clapper, Waterloo Township, Seneca County.

Carpenter and others have completed and abandoned a dry well, 2,646 feet deep, on the A. M. Houseworth, Hector Township, Schuyler County. Property Shares, Inc., is building a rig on the Charles Vanderbilt, Galen Township. Gas States Corp. is drilling at 1,800 feet on the Walter Eichrin, Dansville, Steuben County. Geneva Natural Gas Co. is drilling at 615 feet on the G. E. Decker, Phelps Township. E. A. Adams and others are drilling on the H. Weckerline, Junius Township, Seneca County. H. J. Hadley and others are moving in on the J. P. Welch No. 2 location in Galen Township. Peterman and others are drilling at 200 feet on the Albert Patrick, Phelps Township. They are building a rig on the G. Cleveland, Phelps. Broome-Tioga Corp. is building a rig on the Henry Toowe No. 2 location, Waterloo.

OPPOSE TAX ON GAS

The first court action to test Montana's statute imposing a tax of one-tenth of a cent per 1,000 feet on gas exported from the State for sale and consumption in other states, is being taken. Montana-Dakota Utilities Co., defendant in a recovery suit brought by the State, has filed a demurrer in district court contending that the act upon which the state suit was based imposes a tax on interstate commerce and violates the Constitution of the United States. A similar action covering a different period of time is also pending against the company.

NEW MEXICO EXTENSION

The El Paso Natural Gas Co. is planning to construct a line to supply natural gas to assist in the development of the potash industry now being planned by the Potash Co. of America. The plant will be constructed in Eddy County, north of Carlsbad, N. Mex.

Production of Natural Gas During 1932 Showed Continued Trend Downward

The downward trend in the production of natural gas which was first evidenced in 1931, continued during 1932 when the marketed production amounted to 1,555,990,000,000 feet, a decrease of 8 per cent from 1931. This decline was caused entirely by a general falling off in demand for industrial purposes as the consumption for domestic and commercial purposes continued to increase. The production had a value of $98,985,000 at the wells; its value at points of consumption was $384,632,000.

Exports of natural gas to Canada increased from 74,000,000 feet in 1931 to 83,000,000 feet in 1932, while the amount piped to Mexico decreased, being only 1,610,000,000 feet in 1932, compared with 2,157,000,000 feet in 1931. Imports from Canada into Montana declined from 44,000,000 feet in 1931 to 38,000,000 feet in 1932.

The total consumption of natural gas, production plus imports minus exports, amounted to 1,554,335,000,000 feet, a decline of 8 per cent from 1931. Of the total, 529,378,000,000 feet (34 per cent) was used for field purposes, 385,887,000,000 feet (25 per cent) was used for domestic and commercial purposes, 168,237,000,000 feet (11 per cent) was burned in the manufacture of carbon black, 107,239,000,000 feet (7 per cent) was utilized at electric public utility power plants, 67,467,000,000 feet (4 per cent) was used at petroleum refineries, and 296,127,000,000 feet (19 per cent) was used for other industrial purposes.

These data indicate that the proportion of gas used for domestic and commercial purposes increased in 1932 at the expense of the ratios distributed for carbon black and public utility purposes. The largest gain in the amount of gas used for domestic and commercial purposes was recorded in Illinois; this was due to the fact that the pipe line to Chicago was in operation for the full year.

The number of domestic and commercial consumers supplied with natural gas in 1932 was 7,037,000, an increase of 1 per cent over 1931. This gain, which maintained an unbroken record of increases back to 1919, was due principally to a gain in the number of consumers using natural gas mixed with manufactured gas. The average price paid by domestic and commercial users rose from 65.5 cents in 1931 to 69.3 cents in 1932. This gain resulted chiefly from the increased distribution of mixed gas, which has a higher average value than straight natural gas.

The quantity of natural gas used for field purposes, 529,378,000,000 feet, although practically the same proportion of the total consumption in 1932 as in 1931, was 7 per cent below the 1931 total. A further curtailment of operations at carbon black plants resulted in a decline of 14 per cent in the amount of natural gas burned at such plants in 1932.

The amount of natural gas used for fuel at petroleum refineries continued to decline, amounting to only 67,467,000,000 feet compared with 75,548,000,000 feet in 1931. According to the U. S. Geological Survey, the quantity of natural gas used at electric public utility power plants decreased in 1932 for the first time since 1925; the consumption for 1932, 107,239,000,000 feet, was 22 per cent below 1931.

The number of gas wells operated in 1932 was 54,156 or 1,600 less than in 1931. According to The Oil and Gas Journal, there were 1,027 gas wells drilled in 1932, indicating that 2,627 wells were abandoned or disconnected in 1932.

Although the total number of interstate movements increased in 1932 the total amount of gas moved over state lines declined slightly. The total interstate movement in 1932 was 331,473,000,000 feet compared with 332,538,000,000 feet in 1931. Louisiana held first place in interstate business, while Texas superseded West Virginia in second place.

Texas ranked first in both production and consumption of natural gas in 1932 with California second and Oklahoma third. Ohio ranked first in domestic and commercial consumption, Oklahoma in use, and Texas in quantity used for carbon black manufacture and petroleum refining.

PROGRESS ON ARIZONA LINE

With a force of 750 construction men on the job, the Western Gas Co.'s 215-mile 10¾-inch line extension from Douglas to Tucson and Phoenix, Ariz., is making rapid headway. More than 35 miles of right of way had been cleared between Douglas and Tucson, according to H. G. Frost, vice president and general manager of the company. Twenty-five miles of pipe had been strung and 20 miles welded. Ten miles of ditching had been completed and the first section, 3½ miles, was given a pressure test in the ditch. The line will operate at pressures from 350 to 650 pounds.

CENTRAL ILLINOIS LINES

Incorporated as a subsitiary of the Panhandle Illinois Pipe Line Co. and having offices in the Public Service Building, Springfield, Ill., the Central Pipe Line Co. has received a general charter to engage in natural gas and oil operations. The company will construct two natural gas lines in Central Illinois to serve Central Illinois Public Service Co. communities now using manufactured gas.

EQUALIZATION TAX ON GAS

A demand for an equalization tax on natural gas to control the competition with bituminous coal will be made at the next session of Congress, according to Washington reports. The labor costs in the bituminous coal industry amount to about 65 per cent of total costs, against a labor cost of about 5 per cent in the natural gas industry, according to J. H. Pierce, assistant in charge of coal, to NRA Deputy Administrator Simpson.

EXTENSIONS IN IOWA

Permits for the construction of 346 miles of natural gas transmission line have been granted since January of this year by the Iowa Railroad Commission. This will increase the mileage of such lines in the State from 827 to 1,173. The State Board of Assessment and Review of Iowa reports that the valuation of natural gas lines in Iowa, for taxable purposes, totals $6,524,657.

Argue Proposal Would Duplicate Facilities

TOPEKA, Kans., Oct. 28.—The American Pipe Line Co. has applied to the District Court of Marion County for a review of the proceedings before the State Corporation Commission in granting a certificate of authority to the Inland Pipe Line Co. to build a natural gas pipe line from the Reno County gas fields to Emporia.

The commission granted the certificate some weeks ago. The American company sets out that to permit the Inland company to build the line would amount to a duplication of the facilities already in operation and that this would amount to an "inexcusable and wasteful condition."

The Inland company proposes to furnish natural gas to Emporia and to the towns between the field and Emporia at a lower city gate rate than is now charged.

CHALLENGE PENALTY CHARGE

The chairman of the Indiana Public Service Commission has indicated that the commission may take action to abolish penalty charges for failure to pay utility bills promptly. Recent rate readjustments made by the commission have eliminated penalties. It is expected that utility companies will oppose the plan when it is brought to an issue. They explain that the penalty system is universal throughout the country and that it in no way increases the revenue of utilities charging the penalty. Generally a 10 per cent penalty is added in Indiana on delinquent utility bills and this extra revenue approximately covers second billings, investigations and other added costs resulting from failure of patrons to pay their bills on time. At least 90 per cent of the utilities, including those municipally owned, operating in Indiana charge such penalties, according to utility operators.

FIGHTS OCCUPATION TAX

The Seattle Gas Co. has appealed to the Supreme Court of the United States to prevent the municipality of Seattle from forcing the gas company to pay the newest license, or occupation tax, adopted by the city. In its appeal the gas company points out that the city is an active competitor. The city has gone far into municipal ownership of street car and bus systems and the publicly owned city light, operates the electric plant and solicits gas consumers in an effort to have them substitute electricity for gas. The gas company asserts that the new license tax would deprive it of property in violation of its rights under the Federal Constitution.

STANDBY AT EL PASO

Texas Cities Gas Co. has completed installation of natural gas standby equipment at its El Paso, Tex., plant, at a cost of about $6,000. According to R. S. Reading, El Paso, manager for Texas Cities Gas Co., service can be switched to the standby equipment within three hours. Storage of 1,700,000,000 feet is maintained at El Paso, which would be more than adequate to keep the city on gas while the standby plant was being put into operation.

TEXAS REPRESSURING LAW

AUSTIN, Tex., Oct. 28.—Governor Miram A. Ferguson has approved the bill passed by the recent special session authorizing the use of natural gas for repressuring of wells.

TECHNICAL QUESTIONS ANSWERED

By Charles K. Francis, Ph. D., Technical Editor

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible.

Inquiries must be signed but only the given initials will be printed. The source of the questions is considered to be confidential.

Questions requiring a discussion of patents, the use of intricate formulas, extended computations, or cost estimates cannot be considered.

When the matter is of general interest the reply will be published within a reasonable time.

C.F.R. Motor Method and Meaning of Octane Number

I will appreciate your giving a short outline of the new C.F.R. method of determining the octane number of gasoline as I am interested in knowing just what octane numbers signify. I had a hazy idea of the method used with the old-type engine but was never clear as to whether the numbers represented a certain percentage of octane in the standard fuel and since the new engine has been designed I have been unable to find the information. —S. C.

The peculiar knock observed when an internal combustion engine is in operation has been found to be a function of the fuel. Some gasolines when consumed in an engine will produce more knock—more than others. The method for determining knock rating, octane number, is an actual trial in an engine especially designed for the purpose. In other words, the apparatus is so arranged that it may be run with a gasoline of unknown knock intensity and, then, without stopping, is charged with a fuel of known knock value. Measurements are made alternately until a definite conclusion as to the relatively values is reached.

The selection of something that would serve as the known value, "the yardstick," by which all gasolines could be measured, was a task requiring considerable research, and the present octane number standard was the result. It was discovered that mixtures of the hydrocarbons heptane and octane could be made to match the knock of any gasoline. Heptane is a bad knocker while octane is free from knock, so by diluting octane with heptane, and designating the blend in terms of octane percentage, a unit for comparison is available. This percentage is called octane number. Then if an unknown gasoline matches, when used in the engine, a mixture containing 70 per cent octane, the gasoline is said to have an antiknock value of 70 octane number.

The knock testing engine has been perfected, and the details of test conditions standardized, by a committee representing different government departments and national societies, known as the Co-operative Fuel Research Committee, hence the name C.F.R. method. The recently adopted C.F.R. Motor Method does not involve any change of principles, but the details are such that the results more nearly check actual road conditions, as to the knock tendencies of various gasolines.

Quality of Bright Stock Made in Russia

Can you tell me anything about the specifications of Russian Bright Stock?—C. D. S.

The Petroleum Times reports the arrival at an English port during last July of a shipment of Bright Stock which had been produced in U.S.S.R. The material following is abstracted from Petroleum Times, August 26, 1933:

TESTS OF RUSSIAN BRIGHT STOCK	
Specific gravity	0.906/0.907
Gravity A.P.I.	24.7/24.5
Flash—closed	500°F./505°F.
—open	530°F./540°F.
Viscosity at 140° F.	
Redwood	545
(Saybolt Universal)	(643)
Viscosity at 200° F.	
Redwood	137
(Saybolt Universal)	(162)
Setting point	5° to 10°F.

"The advent of Russian Bright Stock on the United Kingdom market is an event likely to be of considerable importance in the near future to the British oil-blending industry, as it constitutes an entirely new product from which high-grade motor oils can be produced.

"It possesses the characteristics of Pennsylvania Bright Stock as regards oxidation test—the vital factor in oils for internal combustion engines—a good flashpoint, low setting point, and a viscosity curve lying between that of Pennsylvanian and Western Bright Stocks."

French Method For Tar and Asphalt in Black Oil

I should like to know the detailed procedure for determining the asphalt content of oil by the French R. R. Method.—W. W. S.

The test for the determination of tar and asphalt content of black oil by the French Railway method is described as follows:

Apparatus: (a) Erlenmeyer flasks, 250 c.c. capacity; (b) funnel and filter papers; (c) glass stoppered jars or graduated cylinders.

Reagents: (a) Gasoline, specific gravity 0.640 to 0.645 (87° to 89° A.P.I.) at 15° C. and distilling between 35° C. and 50° C. (Engler distillation); (b) benzol, purified; (c) kerosene, 42/44 water white has been used with best results; (d) 66° Be. sulphuric acid, specific gravity 1.8354 at 60° F., 93.19 per cent by weight H_2SO_4.

Procedure: (a) Mix 50 c.c. of oil with an equal quantity of kerosene in a glass stoppered jar. The mixture is shaken until the oil is dissolved. To this mixture are added 10 c.c. sulphuric acid of 66° Be. gravity. The oil, kerosene and acid are then mixed thoroughly by shaking. This process is repeated 10 different times, each time for a period of 10 seconds. The jar is then placed in a water bath at 104° F. (40° C.) for one hour, and the separation read. Ten cubic centimeters are subtracted from the deposited material to account for the acid used, and the remainder multiplied by 2 to obtain the percentage of tar; (b) hard asphalt: Between 1 and 2 grams of oil are weighed in an Erlenmeyer flask. For every gram of oil, 60 c.c. of gasoline are added to dissolve the oil. The flask is then agitated to see that all the oil is dissolved. This mixture should be made at about 5 o'clock in the evening, and left in the dark until the next morning, that is, for about 17 hours. The temperature of the room is not considered, but the temperature here never goes higher than 68° F. during the night time and it is our impression that if the temperature of the room is kept between 65 and 70° F. very little difference in results would be obtained. The next morning, the solution is filtered. After washing the filter with the same gasoline, the precipitate is dissolved with pure warm benzol. All the benzol is evaporated and the flask is dried and weighed to obtain the asphalt content.

Insoluble and Abrasive Material in Crankcase Oil

What is the significance of the solvent extraction of used automobile crankcase oil to determine the percentage of material insoluble in petroleum ether, chloroform, etc.? What other solvents are used and how are the results interpreted?—R. F. C.

The lubricating oil in the automobile crankcase is gradually contaminated with pieces of metal, road dust, sand, and other mineral matter. Some of these substances may be so finely powdered that they do not settle rapidly, remaining suspended in the oil to be carried to the bearing surfaces where they do damage in proportion to their hardness and quantity present. The common method for detecting the presence of solid materials in crankcase oil is by rubbing some of the oil between the thumb and index finger, then if it feels rough the conclusion is reached that the oil should be changed. The fortunate thing for the motor is that while the test is inadequate and uncertain, the operator usually decides the oil is in bad condition. Most of the mineral matter suspended in the oil is so fine that it is not possible to be detected by simply feeling.

The standard A.S.T.M. methods for determining sediment in crude oils and fuel oils are applicable. Benzol is the solvent by which all lubricating oil, asphalt, etc., is removed, leaving a solid residue that may be measured in a tube or weighed. In addition to the solvents mentioned gasoline is sometimes used. Alcohol, ether and carbon bisulphide may be used but the fire hazard is much greater than with benzol.

There should be no solid matter in a lubricating oil and since the solvent test is made for the purpose of dissolving all of the lubricating material, when any insoluble residue is obtained, the interpretation is made that the oil should be rejected.

The presence of abrasive material in the crankcase is a better reason for the changing of the oil than deterioration of the oil itself. It is a difficult matter to actually destroy oil under conditions of use, but contamination with mineral dust is easy. It is the possible presence of solid materials in the crankcase oil that prompts the automobile manufacturer to recommend frequent draining and replacement of the crankcase oil with new oil.

Motor Oils 10-W and 20-W For Winter Operation

Can you tell me what is meant by motor oils 10-W and 20-W? These are shown on a new list but are not described in any of the specifications I have.—J. E.

The automotive manufacturers have recommended two new lubricating oils, 20-W and 10-W, for trial during the approaching winter season. These are intended to give better service at low temperatures. S.A.E. 20 and S.A.E. 10 oils are classified in accord with their viscosity or fluidity at 130° F. This practice of classifying winter oils at summer temperatures has resulted in a wide variation, in the viscosity or fluidity of the commercial oils sold under these S.A.E. numbers, at the starting or cranking temperature. In order to avoid the very wide differences in the temperature at which an engine can be started with oils of the same S.A.E. number, the new 20-W and 10-W oils are classified in accord with their viscosity or fluidity at 0° F., or in other words are classified in accord with their ability to permit easy starting within the temperature range for which they are recommended.

The classification for these two new oils is as follows:

	Viscosity at 0° F.	
	Maximum	Minimum
20-W	40,000	10,000
10-W	10,000	5,000

S.A.E. 30 oil is recommended for use during the summer months and where the minimum temperature does not fall below 32° F. The new 20-W oil is recommended for use where the minimum temperature at which the engine is to be started will be below 32° F. but not below 0° F. For districts where the minimum temperature at which the engine is to be started is below zero, but is not lower than 15° below zero, the new 10-W is recommended. For temperatures lower than 15° below zero 10-W should be diluted with 10 per cent kerosene.

These new oils, which are being recommended by the motor car manufacturers for use during the winter months under the climatic conditions outlined above, will greatly reduce engine wear, will lubricate the engine satisfactorily under all driving conditions and will lessen starting difficulties. However, under prolonged high speed driving, the oil consumption will be higher than with the heavier oils generally recommended for use during the summer months.

These new classifications are new being intensively studied by the lubricants division of the S.A.E. standards committee with a view to later adoption as S.A.E. numbers with such possible changes and modifications as further experience may show to be necessary. Many of the S.A.E. 10 and S.A.E. 20 oils fall within these classifications and may be used as 10-W and 20-W.

PERSONAL PARAGRAPHS

HUGH PLAXTON, of Toronto, Ontario, for some time past president of the Olga Oil & Gas Company, has been appointed general manager.

* * *

B. E. IRESON AND P. R. NAYLOR, of Denver, Colo., officials of the Maple Leaf Petroleums, Ltd., of Coutts, Alberta, recently visited Coutts and Lethbridge.

* * *

SAMUEL J. ASTBURY, who has been secretary of the Staffordshire, England, Iron and Steel Institute, has been elected secretary of the Institution of Petroleum Technologists.

* * *

H. R. MILLER, K.C., president of the Canadian Western Natural Gas, Light, Heat & Power Company of Calgary, returned recently to Edmonton, Alberta, after a business trip to New York.

* * *

PAUL REED, engineer for the Cargray Corporation, of Pampa, Tex., was in Tulsa during the past week.

* * *

R. F. RYAN, consulting geologist, Houston, Tex., has returned from a vacation trip to Chicago, where he visited the World's Fair.

* * *

J. C. NICKLOS, of the Continental Oil Company, has established his headquarters in Houston, Tex., and is in charge of the company's field operations in the Gulf Coast area.

* * *

R. E. ALLEN, secretary of the Central Committee of California Oil Producers, and assistant oil umpire, has returned from the northern part of the State where he has been on a flying business trip.

* * *

B. C. SCHICK, of the export department of the Texas Company, New York City, left Thursday, October 26, on the S. S. Deutschland of the Hamburg-American line. He will stop at European points en route to the Belgian Congo in Africa.

* * *

MR. AND MRS. C. C. WITT, of Tulsa, won the Oklahoma State Bridge Championship for mixed pairs at Enid, Okla., October 23 with a score of 68 points. Mr. Witt is chief clerk in the Tulsa district office of the Parkersburg Rig & Reel Company.

* * *

H. W. PONTIUS, who has been stationed in East Texas working for the Department of the Interior, has returned to McCamey, Tex., where he formerly was connected with the Continental Oil Company. He will be in the production department of that company.

* * *

DAVID POWELL, of Tulsa, district representative for the Detroit-Graphite Company, is recovering from a serious injury received when his horse fell on him during a horseback ride. He has been in the hospital seven weeks with several broken bones, but it is expected that he will soon be about again.

* * *

MR. AND MRS. SAMUEL P. WALLACE announce the birth of a 9-pound daughter. Mr. Wallace is district manager for the Parkersburg Rig & Reel Company, Dallas, Tex. The baby is named Nancy Margaret in honor of her grandmothers, Mrs. Margaret Wallace and Mrs. N. P. Wolverton, both of Tulsa.

C. E. ANSTIE, vice president of the Shell Oil Company of British Columbia, Ltd., was one of a party which recently made an airplane trip from Vancouver to Regina, Saskatchewan, and return.

* * *

J. E. J. TAYLOR, director of Societe Generale des Huiles de Petrole, the French subsidiary of the Anglo-Persian Oil Company, has had conferred on him the cross of the Legion of Honor by the French government.

* * *

G. H. COXON, a director of Steaua Romana, Bucharest, and manager of the manufacturing division of the Anglo-Persian Oil Company, Ltd., is visiting in the United States. He expects to spend the month of October investigating processes of interest to his companies in their manufacturing operations.

H. S. TEGNER AND A. WATERSTON have been appointed joint general sales managers for the Anglo-American Oil Company, Ltd., in Great Britain.

* * *

MR. AND MRS. ERNEST KELLS, who some time ago purchased the McColl oil property at Petrolia, Ontario, are taking up their residence in that town.

* * *

TRONSON DRAPER, formerly western production manager of Imperial Oil, Ltd., has returned to Petrolia, Ontario, after spending a few weeks in Calgary.

* * *

DR. A. WADE, consulting petroleum technologist, of London, England, is leaving shortly for Australia to investigate certain areas on behalf of Australian oil interests.

* * *

T. A. HALL, engineer for the Tide Water Oil Company, Tulsa, spent several days at the Houston, Tex., offices of the company.

* * *

F. S. HOXIE, drilling contractor, has recently moved back to Tulsa from Kansas where he and his family moved earlier in the year.

* * *

M. C. McDOWELL, superintendent, and J. ZABA, engineer, Rio Bravo Oil Company, Houston, Tex., have been visiting the company's properties in the Electra Field of northern Texas.

* * *

JAMES HUTCHESON, vice president and general manager of Rio Bravo Oil Company, Houston, Tex., spent several days in New York City and other eastern points in conjunction with his trip to the American Petroleum Institute meeting at Chicago.

* * *

L. E. PHILLIPS, vice president of Phillips Petroleum Company, Bartlesville, Okla., who was taken to St. Anthonys Hospital, Dodge City, Kans., for treatment for injuries suffered in an automobile accident west of Dodge City, is reported recovering.

* * *

JOHN R. SUMAN, vice president and director of the Humble Oil & Refining Company, Houston, Tex., extended his trip to the American Petroleum Institute meeting at Chicago to take in Cleveland, Ohio. Accompanied by Mrs. Suman, he has returned to Houston.

* * *

DR. L. W. PARSONS, chief chemist of the Tide Water Oil Company, was a passenger on the Graf Zeppelin last week on its trip from Chicago to Akron, Ohio. Doctor Parsons, who attended the American Petroleum Institute meetings, left on Thursday in order to take the trip. He has served as fuel adviser to the operating staff of the airship on most of its flights.

* * *

J. W. WATSON AND J. F. M. TAYLOR, of St. Louis, Mo., have been named vice presidents of Shell Petroleum Corporation, it was announced by ALEXANDER FRASER, president. Mr Watson will act as general vice president and treasurer and comptroller in charge of all accounting, general personnel and stores matters. Mr. Taylor will continue in charge of manufacturing, research and development. He was formerly superintendent of Shell plants at Wilmington and Dominguez, Calif.

Do You Remember?

From The Oil and Gas Journal Files

25 Years Ago

November 1, 1908

A rotary test in the Coalinga Field in California is reported to have made remarkable progress. It has drilled 1,600 feet of 14-inch hole in 60 days. California oil men are watching the experiment of drilling with rotary and many believe it will largely supersede cable tool drilling in that State.

The tanker "Oklahoma" of the J. M. Guffey Petroleum Co., the largest ever turned out of an American shipyard, has arrived at Port Arthur, Tex. It has a capacity of 64,000 bbls.

20 Years Ago

November 6, 1913

The Magnolia Petroleum Co. will shortly lay an 8-inch pipe line from the Cushing Field in Oklahoma to Petrolia, Tex. It will be 230 miles in length. This will give the company a continuous line from Cushing to Beaumont, Tex. The new line will handle 20,000 bbls. daily.

Nelson K. Moody, vice president and general manager of the Prairie Oil & Gas Co., announces that the company's pipe line extension from Carrolton, Mo., to Alton, Ill., will be finished within the next 30 days.

R. Otis McClintock, secretary of the Gladys Belle Oil Co., and Miss Gladys Belle Stebbins, daughter of Grant C. Stebbins, president of the company, were married at the bride's home on West Fifth Street in Tulsa, Tuesday, November 4.

Frank A. Gillespie, Tulsa oil producer, shot a bull moose with a stretch of 50 inches of horn, and his son Parmar, age 12 years, shot another with a stretch of 43 inches, on a hunting trip in the Lake of the Woods country.

Alfred H. Brainard, for 41 years associated with the Standard Oil Co. and comptroller of the Standard Oil Co. (New Jersey), dies in Mayo Hospital in Rochester, Minn.

The largest well yet found in the new Healdton Pool in Carter County, Oklahoma, is in. It is Red River Oil Co.'s No. 1 McClure and is good for 100 bbls. per day. A few months ago Healdton was a deserted spot. Now it is alive with oil activity.

It is estimated that about $20,000,000 in English, Dutch and French capital is invested in the oil fields of Oklahoma. The largest investment is that of the Union Des Petrolles of France, which operates through, and with, American oil men. The Roxana Petroleum Co. is another important foreign company, and the Oklahoma Oil Co., Ltd., a third. Foreign companies produce 14,000 bbls. out of a total of 208,000 bbls. produced in Oklahoma. Gypsy Oil Co. has a production of 22,000 bbls.; Prairie Oil & Gas Co., 16,000 bbls.; Texas Co., 12,000 bbls.; foreign companies, 14,000 bbls., and all other producers, 144,000 bbls.

10 Years Ago

November 1, 1923

The Prairie Oil & Gas Co. has obtained the approval of the directors of the Producers & Refiners Corp. to obtain control of the latter corporation by an exchange of 1 share of Prairie stock for 10 shares of Producers & Refiners, to the extent of 51 per cent of the shares of the latter named company. Prairie stock is quoted at $189 per share (par $100) and Producers & Refiners at $19 (par $50).

Germany has its first filling station. Olex Petroleum Co. has built it near the railway station in the city of Hanover.

T. E. Swigart, of the U. S. Bureau of Mines station at Bartlesville, Okla., has been "loaned" to the Attock Oil Co., Ltd., and is on his way to India to assist the company in solving its operating problems, which have to do principally with water incursion. During his absence, M. J. Kirwan will be in charge of the Bartlesville station.

GEORGE S. BAYS, production engineer for the Stanolind Oil & Gas Company, with a party of friends, is on a deer hunt in the Sierra Madre Mountains in Mexico.

* * *

CHARLES H. LAMB, independent producer, Tulsa, has recently been in San Antonio and Southwest Texas inspecting acreage with the idea of assuming drilling obligations.

* * *

C. E. ROBERTSON has been appointed superintendent of the Republic Oil & Refining Company's refinery at Texas City, Tex., to succeed L. M. McKINNEY, who resigned recently.

* * *

HENRY L. DOHERTY, who in addition to his many other activities, is president of the Florida Year-Round Clubs, has completed negotiations for the acquisition of the Alba Hotel in Palm Beach.

* * *

CHARLES WARNER, geologist for the Houston Oil Company, addressed members of the Houston Geological Society at their regular meeting October 26, on the subject of "Magnetometer Studies in Southern Oklahoma."

* * *

FORD TURNER and wife have returned from a vacation trip to Chicago and Columbus, Ohio, where they visited relatives. Mr. Turner is scout and land man for the Pure Oil Company, with headquarters at Odessa, Tex.

* * *

R. E. HAVENSTRITE, president of the California Western Oil Company, has been appointed by MAYOR FRANK L. SHAW as a member of the Los Angeles Fire Commission to succeed WILLIAM L. CUMMINGS, who recently resigned.

* * *

JUDGE G. M. CALDWELL, landowner and oil capitalist of Abilene, Tex., is making a tour of the Gulf Coast oil fields.

* * *

H. G. GUINUP, an independent oil operator, formerly located in Fort Worth, Tex., has opened a law office in Houston, Tex.

* * *

RAY ESTABROOK, geophysicist and oil operator, who has been making his headquarters in Alabama and Florida, has been visiting in Houston, Tex.

* * *

W. H. DAVIES, representative for the Baker Oil Tool Company, Houston, Tex., has just completed a business trip to Tulsa and other points in the Mid-Continent.

* * *

JOE ADAMS, general sales manager of the Barnsdall Refineries, Inc., is recovering rapidly from an operation for appendicitis at Mount Sinai Hospital in Milwaukee, Wis.

* * *

FRANK OYSTER, consulting geologist and independent operator, has returned to his old headquarters at Abilene, Tex., after spending the past three years at San Antonio, Tex., and in Kansas.

* * *

HOWARD ATHA, of the Gordon Oil Company; W. HUNTER ATHA, SR., and W. HUNTER ATHA, JR., and C. L. MAGUIRE, of the Roosevelt Oil Company, Mount Pleasant, Mich., were in Chicago last week.

* * *

W. H. FERGUSON, vice president of the Continental Oil Company, and chairman of the regional code committee for the fifth district, has left Denver, Colo., for London, England, in connection with the affairs of the Continental's British subsidiary.

* * *

LUDWIG SCHMIDT, petroleum engineer connected with the U. S. Department of Commerce, Bureau of Mines, Bartlesville, Okla., is recovering at the hospital in Niles, Mich., from his automobile accident near that place. It is understood that Mr. Schmidt, although injured quite seriously, will be sufficiently recovered to return to Bartlesville within two weeks.

Had Adventurous Life

Frank Turley, who took up his duties as manager of Imperial Oil, Ltd., Victoria, British Columbia, March 1, 1933, has had an adventurous life. He has been with the company more than 20 years. His first connection with Imperial Oil, Ltd., was as salesman in Regina, Saskatchewan, in 1911. Six years later he was made assistant manager of the Regina division, and shortly afterward was transferred to the Calgary division in the same capacity.

FRANK TURLEY

In 1919 when the Edmonton branch was reopened, Mr. Turley was sent there as manager. Under his direction the Edmonton division has grown from 60 to 242 substations, and from the smallest to one of the largest divisions in volume of business of the Imperial sales organization.

At the time of his transfer Mr. Turley was president of the Edmonton Chamber of Commerce, a director of the Rotary Club and a provincial director of the Alberta Motor Association, as well as a member of the Edmonton Club and the Highlands Golf Club.

He is an enthusiastic sports fan with a special interest in hockey.

Prior to joining the Imperial organization Mr. Turley's career included adventures on the Gold Coast of Africa and service as a trooper in the Scottish Horse in South Africa. He was in the Panama Canal Zone for several years and while there was awarded a medal by President Theodore Roosevelt for his outstanding services.

B. B. BLAIR, independent oil operator of Tulsa, is making an inspection trip of the Gulf Coast fields.

* * *

H. R. KUNDHART, president of the Venza Oil Company, New York City, has been in Houston, Tex., visiting the company's property in the Gulf Coast district.

* * *

W. E. BRYAN, of the land department of the Producers & Refiners Corporation, is in Denver, Colo., on his way back to headquarters at Independence, Kans.

* * *

G. B. TRELOAR, vice president of the Old Dutch Refining Company, and W. HICKEY, of Naph-Sol Refining Company, Muskegon, Mich., were in Chicago last week.

* * *

JOHN BORDEN, president and general manager of the Old Dutch Refining Company, of Muskegon, Mich., has returned from a partridge hunting party in northern Michigan.

* * *

MARCH H. LOWRANCE, land man for the Sinclair Prairie Oil Company, Fort Worth, Tex., and MISS DOROTHY DAVIES of that city, will be married at St. Andrews Episcopal Church, November 9.

* * *

GEORGE RATCLIFFE, general manager of the Baroid Sales Company, left Los Angeles, Calif., October 25 for the St. Louis, Mo., offices of the National Pigments & Chemical Company. He is expected to return, within several weeks, by way of Houston, Tex.

* * *

WALTER MILLER, vice president of the Continental Oil Company, arrived at the American Petroleum Institute convention in Chicago a little late and excited but was congratulated as a grandfather following the birth of a daughter to his daughter, Mrs. Sherwood Lahman, of Tulsa.

* * *

THOMAS A. DINES, president of the Salt Creek Producers Association; JOHN T. BARNETT, president of the Mountain Producers Corporation, and W. B. EMERY, chief geologist for the Ohio Oil Company, were in Chicago last week.

G. D. BROWN has returned to Petrolia, Ontario, after some years spent with the International Petroleum Company in the Peruvian fields.

* * *

MR. AND MRS. E. F. BAIRD, who are on furlough from the Peruvian fields, are visiting at Petrolia, Ontario, after a motor trip to Franklin, Pa., and Chicago.

* * *

W. H. SNEATH AND BENJAMIN O'SHEA, of the Union Carbide Company, left Saturday, October 28, on the Europa of the North German Lloyd for European points.

* * *

CARL BEAL, of Los Angeles, Calif., reports that he and associates are planning to drill a test on a peninsula about 150 miles south of Anchorage, Alaska, next spring.

* * *

GEORGE W. SNEDDEN, general manager of the British American Oil Producing Company, Tulsa, who has been confined to his home for several weeks with pneumonia, is reported to be out of danger.

* * *

DON FORKER, manager of advertising and publicity of the Union Oil Company, was the principal speaker at the gathering of the Friday Advertising Forum held in the Clark Hotel, Los Angeles, Calif.

* * *

MR. AND MRS. W. G. RICKETTS, MR. AND MRS. C. B. CREEKMORE, AND MR. AND MRS. FRED H. REUSCH, all of Tulsa, are spending a three weeks' vacation in Hot Springs, Ark. Mr. Ricketts is general superintendent for the Amerada Petroleum Corporation, and Mr. Creekmore and Mr. Reusch are drilling contractors and oil producers.

* * *

HERBERT SMITH, vice president of the Sinclair Prairie Oil Company, Tulsa, was in Palestine, Anderson County, Texas, visiting the new oil field in that area.

* * *

HENRY BOGGESS, head of the safety department for the Sinclair Prairie Oil Company, Tulsa, has returned home from a trip to Texas where he visited company offices.

* * *

GEORGE FOSTER, vice president of Devonian Oil Company, Tulsa, is spending considerable time in the Texas Gulf Coast district, visiting the various fields and making Houston his headquarters.

* * *

GEORGE WALDEN, formerly a scout for the Pure Oil Company, and later transferred to the production department in Chicago, has been assigned to a position in the company's Houston, Tex., office.

* * *

LEONARD ORYNSKI, chief geologist, and FRED A. DAVIES, assistant manager of the California Company, Dallas, Tex., are in Corpus Christi, Tex., attending the fifth annual meeting and field trip of the Gulf Coast geologists.

* * *

C. H. McDUFF, who has been in the production department of the Lago Petroleum Corporation, Lagonillas, Venezuela, is back in the United States on business. Mr. McDuff was formerly production superintendent for the Pure Oil Company, Fort Worth, Tex.

* * *

A. J. HAZLETT, editor of the Inland Oil Index, of Casper, Wyo., and dean of western oil trade writers, has been made a member of the regional production committee under the oil code for the fifth district. Mr. Hazlett served on the oil trade board during the World War.

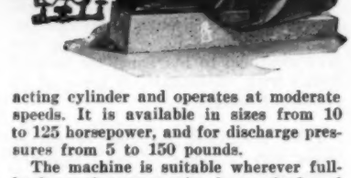
* * *

A. V. GROVE has been transferred from the Cleveland, Ohio, offices of Steel and Tubes, Inc., to the Chicago offices in the sales department. R. E. DOYLE is now sales correspondent in the Cleveland office, and J. F. KEELER is now sales engineer with headquarters at the Cleveland office of the same company.

NEW AND IMPROVED EQUIPMENT

Ingersoll-Rand Announces Heavy-Service Compressor

A new single-stage, belt-driven compressor designed for heavy-duty service is announced by Ingersoll-Rand Co., 11 Broadway, New York. It is designated the Class ES. It has one horizontal, double-



acting cylinder and operates at moderate speeds. It is available in sizes from 10 to 125 horsepower, and for discharge pressures from 5 to 150 pounds.

The machine is suitable wherever full-load, continuous service is required and wherever power cost is an important consideration. The manufacturers say it will give economical standby service for large compressors whose full capacity is not always needed. It is adapted for use in isolated plants where there is little supervision, for all applications where oil in the discharge line is objectionable, or for installations where a future change in pressure conditions may call for a change in cylinder size. It will handle poisonous or inflammable gases, or any others that must be handled without leakage.

Low air speeds and small pressure losses obtained by liberal design of air passages and valves are said to insure maximum economy. These features and effective water jacketing also insure low air temperatures, which simplifies lubrication problems and lengthens the service life of valves, cylinders and piston rings. A double row of Timken tapered-roller bearings on each end of the crankshaft reduces friction, makes bearing adjustments unnecessary for a long time, and provides rigidity against all strains. Regulating equipment suitable for any conditions of service can be furnished.

Portable Electric Grinder Has Wide Variety of Uses

Rough off-hand grinding, touching off parts, tools and dies, and varied grinding and sharpening jobs are facilitated with the new high-speed portable electric tool announced by the Chicago Wheel & Manufacturing Co., 1101 West Monroe Street, Chicago.

The design of the Hand-ee Hi-Power grinder is compact, well balanced and light, yet powerful, with the stamina needed to grind all day long. With a suitable grinding wheel or cutter inserted in the chuck, this tool works at any angle, getting into and around corners, into irregular-shaped holes and other hard-to-reach places. Grinding, polishing and cutting are accomplished with a minimum of time and labor.

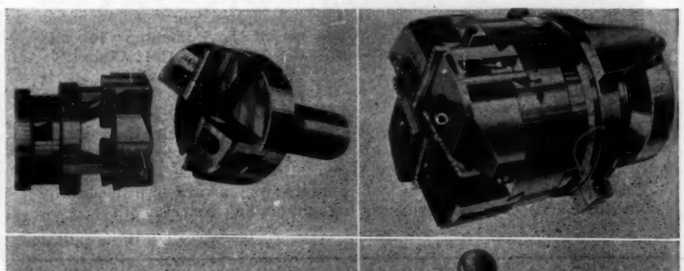
This tool weighs only 3 pounds. Three grinding wheels are furnished with it and over 100 shapes and sizes of Chicago grinding wheels are available to meet practically every need, thus providing a multiple-service tool at one-tool cost. A universal motor provides abundant power for a wide variety of work. The tool has a maximum speed of 17,000 r.p.m. and may be plugged in on either alternating or direct current, 110 volts.

The American Steel & Wire Co. is distributing from its various branch offices a folder enumerating the advantages of the Fiege Tiger-claw wire rope sockets.

Landis Announces New Series Threading Die-Heads

The Landis Machine Co., Waynesboro, Pa., has developed a new series of threading die-heads designed to supplement, but not supersede, its present line. The five-eighths inch and seven-eighths inch Lanco heads (Type V) are built for hand-operated threading machines; the five-eighths inch, seven-eighths inch and 1¼-inch Landex heads (Type L) for automatic screw machines; and the five-eighths inch, seven-eighths inch and 1¼-inch Landmatic heads (Type H) for turret lathes.

These new die-heads are made of a special alloy steel and are hardened and precision-ground. They are simple in design, and remarkably rigid, to insure accuracy and practically eliminating wear of working parts. The heads are recommended by the manufacturer for high production or heavy duty service *or* for work that must be held to extremely close thread limits.



Upper left, dismantled head. Upper right, Lanco head (type V). Lower left, Landex head (type L). Lower right, Landmatic head (type H).

The heads represent a radical departure from the conventional Landis design. The chasers used in the Type V, L and H heads, however, are the same as those used in the Lanco, Landex and Landmatic heads now in use and are interchangeable with these heads.

The chaser-holders, mounted on the face of the head body, operate in dovetail slots ground in the head body and have an unusually wide bearing surface consisting of the combined areas of the base and the dovetail section of the chaser-holders. The driving member of the die-heads, that is, the shank or attaching flange, is attached directly to the head body in which the chaser-holders are supported. The drive, therefore, is direct, and no torsional strains can be transmitted to the head adjusting or locking mechanisms or to the head opening and closing mechanisms.

The head opening action is obtained by moving the chaser-holders away from the work. As seen in Figure 1, the position of the chaser-holders is controlled by the prongs, which are an integral part of the closing ring. The supporting surfaces of these prongs act as cams, and as a key in the chaser-holder slot fits into a keyway in the prong the action of the chaser-holders, both to and from the closed or locked position, is positively controlled. The movement of the closing ring is actuated by spring pressure acting directly upon the closing ring itself.

The movement of the closing ring is controlled by a locking ring. In Figure 1 the locking ring is shown in the open position of the die-head. In closing the die-head the locking ring is rotated on the head body, and through tapered surfaces it forces the closing ring forward. Four offset surfaces on the front of the locking ring hold the closing ring in the locked position.

The opening and closing of the Lanco head (Type V) and the Landex head (Type L) is obtained through a yoke. The Landmatic head (Type H) may be opened and closed either automatically or by hand. The automatic opening action is obtained by merely interrupting the forward movement of the die-head onto the work.

The mechanism for adjusting the die-heads to size gives an adjustment of exactly .001 inch in the pitch diameter of the thread. The gradations are clearly marked and widely spaced so that adjustments as fine as .00025 inch are possible.

The chaser-holders are designed to facilitate the changing of chasers, to permit a more accurate setting of the chasers with relation to the cutting center and to afford a rigid support for the chasers. The die-heads can be employed for cutting both right and left-hand threads by using the proper chaser-holders. The same chasers are used for right and left-hand work by grinding the cutting angles at both ends of the chasers. Details and specifications of the new die-heads are given in Bulletin No. F-80, sent on request.

The General Machine & Tool Co., Augusta, Kans., with shops in Augusta, Canton, McPherson and Valley Center, Kans., has been appointed distributor of both the preformed and nonpreformed Macwhyte wire lines.

New Magnetic Starter Is Put on Market by EC&M

For motors up to 15 horsepower, 220 volts, and 30 horsepower, 440-550 volts, the Electric Controller & Manufacturing Co., East Seventy-ninth Street and Wood-

land Avenue, Cleveland, Ohio, announces the EC&M No. 1 Type ZOS oil-immersed, across-the-line, combination magnetic starter, containing an unfused or fusible safety switch, a magnetic starter with overload relays, and heavy-duty test jacks for those applications where it is desired to insert meters in the motor circuit without interrupting the operation of the machine. All of the internal wiring of these starters is complete.

These starters are exceptionally small and narrow, having safety switch front operated and a cover that swings vertically. This makes them especially desirable for mounting in restricted spaces such as between the flanges of columns, for mounting on motor-driven machines or many starters closely grouped along a wall.

The safety switches have wiping wedge, double-break contacts, heavy-gauge steel parts with all actuating parts case-hardened. Magnetic starters have bushed arm bearings, highly efficient magnetic circuits making them exceptionally quiet in operation, larger-than-average clearances between live parts and high arc rupturing capacity. Overload relays are accurately designed to provide sensitive overload protection and have high heat inertia to withstand heavy overloads.

NEW AUTOMATIC TIMER

A new electric timer that lends itself to a multitude of automatic and remote-control applications has been announced by the General Electric Co. By combinations of two or more timers, or by using one in conjunction with other types of automatic time switches, it is possible to meet a wide range of process schedules. The timer, designated as Type TSA-10, is "all electric." Timing is started by closing a switch. Resetting is automatic when the control circuit is de-energized. The timing period is readily adjustable over a wide range. When used as a process timer it can be arranged to operate a signal or terminate a process at the end of a predetermined period. By the use of relays and timers together, entirely automatic control can be provided for almost any process.

A 32-page booklet showing the latest precision methods for handling major maintenace jobs encountered in the servicing of automobiles, buses, trucks, and tractors has been published by the South Bend Lathe Works, South Bend, Ind., and is offered free to those interested.

Means of Adjustment of Soil Corrosion Pit Depth Measurements for Size of Sample Examined

By GORDON N. SCOTT

Institute Research Associate at the U. S. Bureau of Standards, Washington, D. C.*

For purposes of determining the condition of pipe lines, investigators have employed maximum penetration into the metal. Thus, it is common in pipe line practice to examine each length of pipe (usually 20 running feet) and to measure the deepest pit on that length. The average of these deepest pits, each of which is associated with the length or area of pipe selected as a unit, is then taken as the measure of the corrosion that has taken place over any length of line. The importance of these investigations warrants a study of this yardstick.

It has been recognized that the average of a number of deepest pits depends upon the area of the surface from which they are selected. Thus Logan and Grodsky, in discussing the results of the U. S. Bureau of Standards soil-corrosion tests, state: "It will be noticed that in each case the 3-inch specimens showed deeper pits than the corresponding 1½-inch specimens." They further state that: "Whatever the explanation for the differences, it is evident that the rates of corrosion and pitting depend to some extent upon the size of the specimen, and that the pitting on specimens of different sizes is not strictly comparable." It is the purpose of this paper to explain the observed difference in pitting rates for specimens of different sizes, and to offer simple means of correlating data for comparison or interpretation.

Pit-Depth-Area Problem

An arithmetical average, or mean, of the deepest pit on each of a large number of corroded surfaces of equal areas associated with the fixed area is characteristic of the corroding metal and of the soil which produced the corrosion. If now we divide each of the areas in two equal (half) areas, all in the same manner, and average the deepest pit in halves "A" and do the same for halves "B," the two measures of the characteristic of the metal and soil will, in general, agree in magnitude—the closeness of the agreement depending upon the number of specimens involved. But these two measures and their average will, in general, be smaller than the average of the single deepest pit associated with the whole area of each specimen. This fact is immediately obvious when we consider that the deepest pit on any one specimen will lie in one of the halves, and the deepest pit on the other half will be less deep; and, moreover, the chance of the deepest pits all lying on one set of halves is negligible. Thus, each of the two series of measurements on the half areas will contain approximately one-half of the measurements associated with the full area.

Further subdivision of the original area will lead to a greater number of averages—each containing the same number of measurements, agreeing closely among themselves, when the number of specimens involved is large, but becoming progressively smaller in magnitude as the area from which they are selected becomes smaller.

Since as the fractional part of the original surface of each specimen from which the deepest pits are selected becomes smaller, the probability of the occurrence of the one deepest pit on the entire surface of each specimen falling in the fractional area also becomes smaller, the following inequality is, in general, true:

$$Pn_1 > Pn_2 > Pn_3 > Pn_4 > \ldots Pn_i,$$

where $n_1 > n_2 > n_3 > n_4 > \ldots n_i$ represent the number of samples or total area from which the deepest pits are selected and P the average depth of maximum pitting associated with the various areas or numbers of specimens.

The process described can be visualized in a rough qualitative way if the reader will mentally subdivide the area of the corroded pipe surface and contemplate the effect of such subdivision upon the value of the mean of the deepest pits which lie one in each of the small subdivisions.

These considerations lead to the following qualitative axioms which, in the long run, will be true for any rational distribution of pit depths:

1. The larger the number of specimens included in a sample, the deeper will be the single maximum pit.
2. The average of all the deepest pits, one from each specimen, or the deepest from a number of samples, each of the same number of specimens, will vary within narrow limits from sample to sample, but will approach constantcy as the number of specimens or samples becomes very large.
3. The number of specimens being fixed, the larger the area of the specimens, the deeper the single maximum pit and the greater the average of the maximum pits—one from each specimen.

These ideas are easily applied to pipe lines, since a fixed area of the pipe may be considered a specimen, and the total area will be proportional to the number of specimens in the sample. Thus, we may state: The larger the area (length and diameter) of the pipe, the deeper the maximum pit or the average of such deepest pits from a number of equal areas or samples.

Applications

It appears quite obvious that the average maximum pitting experienced by a section of line is quite meaningless unless the area from which the deepest pits were selected is specified. It follows, too, that, all other things being equal, the average maximum pitting experienced by pipe lines of various diameters would be appreciably different. If the difference in diameters is large for pipes of the same—or nearly the same—wall thickness, maintenance costs might be large in the one case and small in the other. It would seem advisable, therefore, to reduce all pitting data to a common basis. A practical common area for pipe lines would be that of a length (20 feet) of standard 8-inch pipe (45.16 square feet).

Most of the information contained in a group of data can be satisfactorily condensed into two statistics, the mean and the standard deviation. This is particularly true if the distribution of the data conforms to, or approximates, the normal law. Because of the asymmetrical form of the distribution of maximum pits associated with some areas on a pipe line, the mean may be quite useless for some purposes—even when the associated area and the standard deviation are both given. Thus, if the primary purpose of the investigator is to measure the corrosiveness of a certain soil, and there is available for this purpose pipe lines of various diameters as well as small test specimens, the mean maximum pitting may be sufficient to describe the soil; but the measurements from the different sources must be referred to a common area. To the valuation engineer, on the other hand, the mean maximum pitting on an extended section of line through a variety of soils is almost without significance, since he is more especially interested in how many unit lengths of pipe are pitted to within each of various arbitrary assigned limits. However, the mean will be useful—but insufficient by itself—or even with the standard deviation, if the distribution is especially skew, to answer his question. It is obvious that in this latter case there is a problem which extends beyond the scope of this paper. In any particular case the purpose of the investigation will largely determine the procedure to follow in accumulating data and in the treatment of it. It is merely the intention here to establish the significance of mean maximum pit depth in relation to the associated area. This should be kept in mind when reading what follows.

If over a given territory the entire line has been examined and measured in detail, correction to standard area is simply and most accurately accomplished by plotting the data for each soil, as in the figures given, and interpolating to the desired value of area.

For the purposes of valuation, the examination of the entire line is obviously out of the question because of the cost. It is of practical interest, therefore, to examine the data for more economical methods of arriving at a satisfactory estimate of the pitting. Over any given stretch of line the number and spacing of the inspection holes will, in general, depend upon the spread in the pit depths (standard deviation) and the accuracy desired. Gill has already discussed this problem in an empirical way, although it is subject to more precise statistical analysis. For the present purpose of illustration, about 30 inspection holes will be assumed adequate, and eight pit-depth measurements will be taken consecutively on each linear foot in each of the inspection holes. The procedure involves about 240 pit-depth measurements, and allows four independent checks on the procedure for data selected as illustration as shown below. Attention of the reader is drawn to the fact: that the selection of an adequate number of inspection holes constitutes a very complicated problem. The intent here is not to set a precedent, but to indicate a rational procedure.

It appears now that a rational procedure in the accumulation of pit-depth data would involve making regular observations in successive units of area. The practice sometimes used heretofore of taking arbitrarily the five deepest or the 10 deepest pits over the exposed area of pipe in an inspection hole introduces additional complications, and is difficult of interpretation. The procedure suggested, on the other hand, allows of ready interpretation. Whatever the investigator's choice may be, so far as length and number of inspection holes and number of pit measurements per hole may be, the pit depths should be measured in each hole on successive and equal units of length (area); and the more there are of these unit lengths, the more satisfactory will the data be. There is, of course, a practical limit to the size of the unit selected as well as the length of the inspection hole. It would seem that a running foot of pipe would be such a lower limit of size of unit.

Summary

About 8,800 pit-depth measurements on small isolated specimens and seven actual operating pipe lines have been studied with reference to their significance as a measure of soil corrosion.

1. The important facts upon which this paper is based are:

(a) Pit-depth measurements involve the selection of the deepest pit from an array of individuals.

(b) The value obtained for the deepest pit is dependent upon the size of the sample (number of specimens or surface extent) from which it is selected.

2. These generalizations lead, for any rational distribution of pit depths, to the following qualitative axioms stated in terms of the problem at hand; all other things being equal, and in the long run:

(a) The larger the number of specimens, the deeper the maximum pit that will be obtained.

(b) The larger the size of the specimen, the deeper the maximum pit and the larger the average maximum pit.

(c) The larger the area (diameter and length) of a pipe line, the deeper the maximum pit, and the average of a number of deepest pits from a number of equivalent areas, and the shorter the time for the first puncture of the pipe wall.

3. The qualitative relation between the average deepest pit and the number or area of the specimens will depend upon the law of distribution of pit depths (shape of the distribution curve). For the distributions of pit depths considered in this investigation an empirical linear relation between the logarithms of average pit depths and area reproduces the experimental data satisfactorily for all practical purposes within moderate ranges of area.

4. The distribution of pit depths on pipe lines apparently vary with the character of the pipe material and the character of the soil, but have two noteworthy characteristics in common.

(a) The distribution curve is asymmetrical, the range of the pit depths less than the average being invariably smaller than the range of the pit depth greater than the average.

(b) The spread of the pit depths (standard deviation of the distribution) is large in comparison to the average magnitude of the effect (mean) itself.

5. Two illustrations of the practical use of the pit depth-area relation have been given in detail.

(a) An economical method employing a limited number of measurements for obtaining a figure for the average maximum pitting, associated with a given area, of a section of pipe line has been suggested and illustrated.

(b) Factors by which data on pit depths obtained from small soil-corrosion specimens must be multiplied to convert these data to a basis comparable to what would be obtained for the average pitting on 20-foot lengths of 8-inch pipe have been calculated for a set of assumed conditions.

6. Since average maximum pit-depth measurements have little or no significance unless the area over which the measurements are made is specified, it has been suggested:

(a) That pit depth be taken consecutively on each running foot of pipe, within the extent of the inspection hole, and that preferably eight or more, but certainly not less than four, such measurements be taken per hole.

(b) That all pit-depth measurements on pipe lines be corrected to a standard area of 45.16 square feet corresponding to a 20-foot length of 8-inch pipe when comparison with data from different sources is intended.

*Publication approved by director, Bureau of Standards (U. S. Department of Commerce). Before A.P.I., Chicago, Oct. 24.

Bureau of Mines Statistics for the Month of August, 1933

SUPPLY AND DEMAND OF ALL OILS

(Thousands of barrels of 42 gallons)

	Aug., 1933	July, 1933	Aug., 1932	Jan.-Aug., 1933	Jan.-Aug., 1932
NEW SUPPLY:					
Domestic production:					
Crude petroleum	85,239	84,387	66,568	602,856	532,118
Daily average	2,750	2,722	2,147	2,481	2,181
Natural gasoline	2,824	2,769	2,562	21,902	24,650
Benzol*	171	163	69	925	705
Total production	88,234	87,319	69,499	625,683	557 473
Daily average	2,846	2,817	2,242	2,575	2,285
Imports:					
Crude petroleum	3,673	3,411	1,862	23,346	35,625
Refined products	1,678	1,282	1,506	9,975	24,801
Total new supply, all oils	93,585	92,012	72,867	659,004	617,899
Daily average	3,019	2,968	2,351	2,712	2,532
Increase in stocks, all oils	7,076	5,963	†6,632	24,516	†9,759
DEMAND:					
Total demand	86,509	86,049	79,499	634,488	627,658
Daily average	2,791	2,776	2,564	2,611	2,572
Exports:					
Crude petroleum	3,141	4,523	2,839	23,619	19,267
Refined products	5,049	7,443	5,649	46,030	54,51t
Domestic demand:					
Mor fuel	37,426	34,458	35,706	251,818	250,38*
Kerosene	2,799	2,041	2,278	23,790	20,75t
Gas oil and fuel oil	25,326	25,066	21,244	207,524	202,57t
Lubricants	1,535	1,630	951	10,928	11,172
Wax	134	107	61	795	628
Coke	969	861	855	6,161	5.773
Asphalt	1,309	1,431	1.725	7,478	8,422
Road oil	1,042	1,067	1,378	3,944	4,614
Still gas (production)	4,250	4,524	3,626	30,210	27,410
Miscellaneous	148	144	84	995	1,558
Losses and crude used as fuel	3,381	2,754	3,103	21,196	19,479
Total domestic demand	78,319	74,083	71,011	564,839	554,075
Daily average	2,526	2,390	2,291	2,324	2,271
STOCKS:					
Crude petroleum	356,434	350,894	354,846	356,434	354,846
Natural gasoline	3,779	3,723	3,695	3,779	3,695
Refined products	252,412	250,932	263,598	252,412	263,598
Total, all oils	612,625	605,549	622,139	612,625	622,139
Days' supply	220	218	243	235	242

*Based upon production of coke reported to Coal Division by those by-product coke plants that recover benzol products. †Decrease.

COMPARATIVE ANALYSES

(Thousands of barrels of 42 gallons)

	August, 1933 Total	August, 1933 Dly. av.	July, 1933 Total	July, 1933 Dly. av.	Jan.-Aug., 1933	Jan.-Aug., 1932
CRUDE PETROLEUM:						
Runs to stills	79,151	2,553	79,525	2,565	571,576	557,884
Imports	3,673	118	3,411	110	23,346	35,625
Exports	3,141	101	4,523	146	23,619	19,267
MOTOR FUEL:						
Production	37,137	1,198	37,342	1,201	269,935	270,931
Imports	1	.....	1	.....	8	7,805
Bonded warehouses	.....	.....	.....	.....	2	4
For domestic use	1	.....	1	.....	6	7,801
Exports*	1,961	63	3,303	197	20,116	26,983
Stocks	51,814	.....	54,063	.....	51,814	57,592
Domestic demand	37,426	1,207	34,458	1,112	251,818	250,387
KEROSENE:						
Production	4,109	133	4,272	138	32,630	29,026
Imports	.....	.....	.....	.....	.....	10
Exports	650	21	850	27	5,369	7,366
Stocks	8,445	.....	7,785	.....	8,445	6,247
Domestic demand	2,799	90	2,041	66	23,790	20,755
GAS OIL AND FUEL OIL:						
Production†	27,193	877	29,279	944	209,352	203,379
Imports	1,649	53	1,272	41	9,817	16,789
Bonded warehouses	1,441	46	1,242	40	4,492	523
For domestic use	208	7	30	1	5,325	16,266
Exports	1,637	53	2,170	70	13,243	14,452
Stocks	132,914	.....	131,036	.....	132,914	138,995
Domestic demand	25,326	817	25,066	809	207,524	202,577
Railroads (Class 1)‡	(§)	(§)	3,310	107	122,801	124,323
Public utility power plants‖	976	31	**1,035	33	6,188	5,128
Other	(§)	(§)	20,723	669	178,535	173,126
LUBRICANTS:						
Production	2,019	65	1,965	63	15,057	15,803
Imports	.....	.....	.....	.....	.....	12
Exports	457	15	870	28	5,278	4,863
Stocks	7,236	.....	7,199	.....	7,236	7,965
Domestic demand	1,535	50	1,629	53	10,928	12,472
WAX (thousands of pounds):						
Production	40,220	1,301	36,120	1,165	294,560	322,560
Imports	4,475	144	1,354	44	17,779	26,349
Bonded warehouses	.....	.....	224	7	952	224
For domestic use	4,475	144	1,130	36	16,827	26,125
Exports	19,857	641	21,464	692	167,004	137,778
Stocks	85,924	.....	98,536	.....	85,924	206,461
Domestic demand	37,550	1,211	30,088	971	223,039	175,890
COKE (short tons):						
Production	111,800	3,606	153,600	4,955	1,051,600	1,187,800
Stocks	1,036,900	.....	1,149,100	.....	1,035,900	1,514,500
ASPHALT (short tons):						
Production	246,900	7,965	264,600	8,535	1,460,509	1,667,300
Imports (natural)	1,600	52	700	23	13,100	16,000
Stocks	268,100	.....	278,100	.....	268,109	298,000

*Includes benzol—132 bbls. in August, 1933. †Includes net transfers. ‡Interstate Commerce Commission. §Not available. ‖January-July. ¶U. S. Geological Survey. **Revised.

PRODUCTION OF CRUDE PETROLEUM BY DISTRICTS

(Thousands of barrels of 42 gallons)

	August, 1933 Total	August, 1933 Dly. av.	July, 1933 Total	July, 1933 Dly. av.	Jan.-Aug., 1933	Jan.-Aug., 1932*
Appalachian:						
Pennsylvania Grade	1,893	61	1,787	58	13,677	14,807
Other (inc. Ky.)	534	18	558	18	4,101	5,450
Lima-N.E. Ind., Mich.	940	30	661	21	4,529	5,044
Ill.-S.W. Ind.	478	15	468	15	3,079	3,991
Mid-Continent:						
N. La. and Ark.	1,756	57	1,779	57	14,126	14,862
W. Texas-S.E. New Mex.	6,326	204	6,251	202	47,990	51,787
Other (Okla., Kans., N. Tex., etc.)	48,669	1,570	49,128	1,585	349,683	269,816
Gulf Coast	7,355	254	7,370	238	49,512	32,844
Rocky Mountain	1,346	40	1,344	40	9,758	12,105
California	15,537	501	15,141	488	115,086	120,412
Total	85,239	2,750	84,387	2,722	602,856	532,118

*Final figures.

PRODUCTION OF CRUDE PETROLEUM BY STATES AND PRINCIPAL FIELDS

(Thousands of barrels of 42 gallons)

	August, 1933 Total	August, 1933 Dly. av.	July, 1933 Total	July, 1933 Dly. av.	Jan.-Aug., 1933	Jan.-Aug., 1932*
Arkansas	910	29	1,004	32	7,588	8,109
California:						
Kettleman Hills	1,937	63	1,972	64	14,733	14,666
Long Beach	2,289	74	2,310	74	17,330	18,905
Santa Fe Springs	1,658	53	1,667	54	12,907	15,361
Rest of State	9,653	311	9,192	296	70,116	71,480
Total Calif.	15,537	501	15,141	488	115,086	120,412
Colorado	77	3	83	3	641	797
Illinois	411	13	404	13	2,643	3,424
Indiana:						
Southwestern	67	2	64	2	436	567
Northeastern	.....	.....	1	.....	7	21
Total Indiana	67	2	65	2	443	588
Kansas	3,924	127	4,073	131	27,699	23,405
Kentucky	384	12	422	14	2,998	4,194
Louisiana:						
Gulf Coast	1,432	46	1,331	43	9,529	7,494
Rest of State	848	28	775	25	6,538	6,753
Total Louisiana	2,278	74	2,106	68	16,067	14,247
Michigan	846	27	565	18	4,145	4,283
Montana	170	5	190	6	1,342	1,741
New Mexico	1,269	41	1,271	41	8,983	8,769
New York	280	9	250	8	2,019	2,443
Ohio:						
Central and Eastern	298	10	269	9	2,142	2,435
Northwestern	94	3	95	3	677	740
Total Ohio	392	13	364	12	2,819	3,175
Oklahoma:						
Oklahoma City	8,162	263	8,362	270	43,467	24,676
Seminole	4,113	133	4,048	131	27,614	29,663
Rest of State	6,480	209	6,109	197	47,941	51,086
Total Oklahoma	18,756	605	18,519	598	119,022	105,425
Pennsylvania	1,112	36	1,080	35	8,176	8,517
Tennessee	1	.....	1	.....	4	4
Texas:						
Gulf Coast	6,423	208	6,039	195	39,983	26,350
West Texas	5,095	164	5,018	162	39,259	43,270
East Texas	18,699	603	19,277	622	139,019	82,743
Rest of State	7,290	235	7,259	234	54,957	58,236
Total Texas	37,507	1,210	37,593	1,213	273,218	210,599
West Virginia	357	12	328	10	2,439	2,664
Wyoming:						
Salt Creek	590	19	581	19	4,765	5,480
Rest of State	371	12	352	11	2,768	3,830
Total Wyoming	961	31	933	30	7,533	9,310
Total United States	85,239	2,750	84,387	2,722	602,856	532,118

*Final figures. Includes Alaska, Missouri, and Utah.

INDICATED DOMESTIC DEMAND FOR CRUDE PETROLEUM

(Thousands of barrels of 42 gallons)

Domestic petroleum by by fields of origin:	August, 1933 Total	August, 1933 Dly. av.	July, 1933 Total	July, 1933 Dly. av.	Jan.-Aug., 1933	Jan.-Aug., 1932*
Appalachian:						
Pennsylvania Grade	2,060	66	2,102	68	14,665	14,350
Other (inc. Ky.)	594	19	666	21	4,444	5,740
Lima-N.E. Ind.-Mich.	704	23	601	19	4,868	5,408
Ill.-S.W. Ind.	717	23	597	19	3,395	2,579
Mid-Continent:						
N. La. and Ark.	2,423	78	1,967	63	15,569	18,070
W. Texas-S.E. New Mex.	6,342	204	7,310	236	50,876	55,416
Other (Okla., Kans., N. Tex., etc.)	43,672	1,409	43,360	1,399	311,857	283,989
Gulf Coast	7,186	232	7,120	230	49,763	34,037
Rocky Mountain	1,358	44	1,553	50	9,852	10,304
California	14,680	474	15,589	503	111,295	119,279
Total demand	79,736	2,572	80,865	2,608	576,625	549,172
Exports	3,141	101	4,523	146	23,619	19,267
Domestic demand	76,595	2,471	76,342	2,462	553,006	529,905
Foreign petroleum	3,342	108	3,772	122	25,918	30,821
Total domestic demand	79,937	2,579	80,114	2,584	578,924	560,726

*Final figures.

RECORD OF WELLS FOR IMPORTANT FLUSH FIELDS, AUGUST, 1933*

	Completions Oil	Gas	Dry	Total initial production (bbls.)	Average initial production (bbls.)	Drilling Aug. 31
Texas	354	17	129	(†)	(†)	728
East Texas	193	..	..	(†)	(†)	102
Gulf Coast	77	6	24	82,300	1,000	159
Conroe	37	2	2	53,200	1,400	34
West Texas	16	1	6	3,700	200	97
California	17	..	15	10,400	600	148
Kettleman Hills	..	..	..	.....	.....	12
Long Beach	7	..	..	1,100	200	23
Playa Del Rey	..	..	..	.....	.....	3
Oklahoma	33	4	28	14,500	400	299
Oklahoma County	2	..	..	2,800	1,400	26
Pottawatomie and Seminole Counties	8	..	..	3,700	500	33
New Mexico	2	..	2	23,000	11,500	54
Lea County (Hobbs)	1	..	..	22,900	22,900	5
Other states	232	67	120	39,400	200	1,009
Total United States	643	88	294	(†)	(†)	2,228

*From The Oil and Gas Journal and California office of the American Petroleum Institute. †Not available.

GASOLINE PRODUCTION BY THE VARIOUS METHODS, AUGUST, 1933

(Thousands of barrels of 42 gallons)

	Straightrun Total	Straightrun Per cent (*)	Straightrun Per cent (†)	Cracked Total	Cracked Per cent (*)	Cracked Per cent (†)	Nat. gaso. Total	Nat. gaso. Per cent (†)	Gasoline Total	Gasoline Per cent (*)
East Coast	3,067	20.4	51.1	2,917	19.5	48.6	16	0.3	6,000	39 9
Appalachian	804	25.8	48.6	835	26.7	50.4	16	1.0	1,655	52.5
Ind., Ill., etc.	2,447	22.3	40.7	3,458	31.5	57.4	114	1.9	6,019	53.8
Okla., Kans., Mo.	2,655	27.6	49.1	2,323	24.1	43.0	429	7 9	5,407	51.7
Texas Inland	1,552	32.8	59.8	754	16.0	29.0	290	11.2	2,596	48.8
Texas Gulf	2,559	17.5	42.1	3,181	21.8	53.5	202	3.4	5,942	39.3
Louisiana Gulf	689	17.8	48.4	705	18.2	49.5	30	2.1	1,424	36.6
Ark. and La. Inland	389	20.7	53.4	300	16.0	41.2	39	5.4	728	36.7
Rocky Mountain	242	20.3	38.7	351	27.1	51.8	64	9.5	677	47.4
California	3,563	25.4	58.7	1,654	11.8	27.2	859	14 1	6,076	37.2
Total	17,987	22.7	49.3	16,478	20.8	45.1	2,059	5.6	36,524	43.5

*Per cent of crude run. †Per cent of total gasoline output.

NUMBER OF WELLS COMPLETED IN THE UNITED STATES*

	Aug., 1933	July, 1933	Aug., 1932	Jan.-Aug., 1933	Jan.-Aug., 1932
Oil	642	548	1,145	4,148	7,054
Gas	88	75	69	544	682
Dry	294	252	291	2,180	2,227
Total	1,025	875	1,505	6,872	9,963

*From The Oil and Gas Journal and California office of American Petroleum Institute.

STOCKS OF CRUDE PETROLEUM

(Thousands of barrels of 42 gallons)

	Aug. 31, 1933	July 31, 1933	Aug. 31, 1932
EAST OF CALIFORNIA:			
At refineries by location:			
East Coast: Domestic	8,716	8,938	9,822
Foreign	3,291	2,891	7,644
Appalachian	2,132	2,233	2,174
Indiana, Illinois, Kentucky, Michigan	3,295	3,295	3,556
Oklahoma, Kansas, and Missouri	4,091	4,108	4,842
Texas: Inland	2,510	2,544	1,306
Gulf Coast: Domestic	6,383	6,303	7,238
Foreign	43	100	128
Louisiana Gulf Coast: Domestic	3,456	3,854	2,259
Foreign	698	710	1,526
Arkansas and Inland Louisiana	718	693	667
Rocky Mountain	12,653	12,635	1,630
Total	47,986	48,304	42,782
At refineries by origin:			
Pennsylvania Grade	2,007	2,048	2,143
Other Appalachian (Inc. Kentucky)	503	500	687
Lima-Northeast Indiana-Michigan	311	245	278
Illinois-Southwest Indiana	116	143	90
North Louisiana and Arkansas	1,694	2,296	1,517
West Texas and Southeast New Mexico	3,381	3,237	4,516
Oklahoma, Kansas, North Texas, etc.	18,705	18,784	17,629
Gulf Coast	4,602	4,733	5,064
Rocky Mountain	12,635	12,617	1,560
Foreign	4,032	3,701	9,298
Total	47,986	48,304	42,782
Pipe line and tank farm:			
Pennsylvania Grade	3,970	4,091	4,936
Other Appalachian (Inc. Kentucky)	679	740	869
Lima-Northeast Indiana-Michigan	923	759	1,176
Illinois-Southwest Indiana	10,890	11,096	11,233
North Louisiana and Arkansas	10,701	10,819	14,031
West Texas and Southeast New Mexico	29,771	29,833	30,656
Oklahoma, Kansas, North Texas, etc.	180,381	175,375	164,716
Gulf Coast	11,707	10,329	13,061
Rocky Mountain	14,988	15,123	25,311
Total	264,010	258,665	265,989
Total refinery, pipe line, and tank farm	311,996	306,969	308,711
Producers'	7,250	7,300	5,926
Total crude east of California	319,246	314,269	314,697
CALIFORNIA: Light	37,188	36,625	40,149
Total refinable crude in the United States	356,434	350,894	354,846

STOCKS HELD BY REFINING COMPANIES, AUGUST, 1933

(Thousands of barrels of 42 gallons)

	Gasoline: At refineries	Gasoline: Bulk and pipe lines	Gasoline: Total	Kerosene	Gas oil and distillate fuels	Residual fuel oils
East Coast	4,817	8,812	13,629	2,199	4,879	4,624
Appalachian	1,273	913	2,186	261	532	232
Ind., Ill., Ky., etc.	3,955	2,696	6,651	596	2,526	2,406
Okla., Kans., Mo.	3,342	1,571	4,913	599	1,301	2,930
Texas Inland	1,936	173	2,109	182	491	2,508
Texas Gulf	4,334	324	4,658	2,254	3,136	3,905
Louisiana Gulf	1,140	423	1,563	684	1,922	1,036
Ark. and La. Inland	192	110	302	17	180	526
Rocky Mountain	896	...	896	195	145	476
California	7,153	3,965	11,118	1,458	3,836	95,273
Total	29,038	18,997	48,035	8,445	18,948	113,966

	Wax (thousands of lbs.): Lubricants	Crude scale	Refined	Total	Coke (tons)
East Coast	2,266	10,095	10,810	20,905	57,900
Appalachian	914	12,752	1,494	14,246	5,000
Ind., Ill., Ky., etc.	864	10,297	1,254	11,551	111,000
Okla., Kans., Mo.	454	1,646	1,877	3,523	139,400
Texas Inland	69	....	176	176	115,000
Texas Gulf	1,624	2,223	7,562	10,086	372,800
Louisiana Gulf	72	2,250	957	3,207	29,500
Ark. and La. Inland	21	....	....	....	300
Rocky Mountain	162	21,083	1,147	22,230	101,300
California	779	....	....	....	103,700
Total	7,226	60,346	25,578	85,924	1,035,900

	Asphalt (tons)	Road oil	Miscellaneous products	Unfinished oils	Natural gasoline
East Coast	95,500	154	74	7,824	35
Appalachian	11,100	27	23	1,611	....
Ind., Ill., Ky., etc.	54,500	153	10	7,497	10
Okla., Kans., Mo.	3,900	241	18	4,500	17
Texas Inland	....	26	6	1,237	6
Texas Gulf	5,400	55	9	12,536	147
Louisiana Gulf	24,600	16	..	1,885	..
Ark. and La. Inland	19,900	13	2	489	5
Rocky Mountain	3,300	208	7	2,410	3
California	49,700	237	208	*7,354	2,702
Total	268,100	1,130	357	47,343	2,926

*Includes 3,556,000 bbls. crude gasoline.

SHIPMENTS FROM CALIFORNIA TO EASTERN PORTS IN THE UNITED STATES*

(Thousands of barrels of 42 gallons)

	Aug., 1933	July, 1933	Aug., 1932	Jan.-Aug., 1933	Jan.-Aug., 1932
Gasoline	1,055	1,618	505	7,607	5,972
Natural gasoline	.....	.....	.....	81	217
Kerosene	63	6	77	939	208
Gas oil and Diesel oil	116	.....	279	1,402	802
Fuel oil	67	.....	21	864	21
Lubricants	1	10	.....	29	28
Asphalt	1	.....	.....	1	6
Miscellaneous	14	21	.....	155	55
Total	1,316	1,655	882	11,082	7,309

*Compiled by E. T. Knudsen of the San Francisco office of the Bureau of Mines.

RECEIPTS OF CRUDE PETROLEUM ON THE ATLANTIC SEABOARD

(Thousands of barrels of 42 gallons)

Domestic:	Aug., 1933	Foreign:	Aug., 1933
Penn. Grade	373	Venezuela	1,607
West Texas-S.E. New Mex.	2,286	Colombia	971
East Texas	3,688	Mexico	950
Other Mid-Continent	2,050	Other	222
Gulf Coast	3,124	Total	3,750
Total	11,501	Total receipts	15,251

RUNS TO STILLS AND OUTPUT OF REFINERIES, AUGUST, 1933

(Thousands of barrels of 42 gallons)

INPUT—	Crude oil: Domestic	Crude oil: Foreign	Crude oil: Total	Unfinished oils rerun	Natural gasoline	Total input
East Coast	11,698	3,313	15,011	409	16	15,436
Appalachian	3,119	....	3,119	430	16	3,565
Ind., Ill., Ky., etc.	10,970	....	10,970	336	114	11,420
Okla., Kans., Mo.	9,631	....	9,631	309	429	10,369
Texas Inland	4,728	....	4,728	113	290	5,131
Texas Gulf	14,554	58	14,612	162	202	14,976
Louisiana Gulf	3,794	75	3,869	51	30	3,950
Ark. and La. Inland	1,877	....	1,877	332	39	2,248
Rocky Mountain	1,294	....	1,294	120	64	1,478
California	14,040	....	14,040	638	*859	15,537
Total	75,705	3,446	79,151	2,900	2,059	84,110

OUTPUT—	Gasoline	Kerosene	Gas oil and distillate fuels	Residual fuel oils	Lubricants	Wax (thousand pounds)
East Coast	6,000	718	1,234	3,993	637	18,760
Appalachian	1,655	234	237	443	435	4,480
Ind., Ill., Ky., etc.	6,019	362	729	1,591	178	2,520
Okla., Kans., Mo.	5,407	615	708	1,858	221	2,520
Texas Inland	2,596	275	204	1,371	18	280
Texas Gulf	5,942	956	1,369	3,385	307	3,920
Louisiana Gulf	1,424	282	345	1,349	44	6,160
Ark. and La. Inland	728	65	130	639	21	....
Rocky Mountain	677	48	48	191	9	1,680
California	6,076	554	1,139	6,229	149	....
Total	†36,524	4,109	6,143	21,049	2,019	40,320

OUTPUT (Continued)—	Coke (tons)	Asphalt (tons)	Road oil	Still gas	Miscellaneous	Unfinished products	Shortage
East Coast	17,600	121,100	94	834	39	972	94
Appalachian	1,800	5,800	35	230	24	85	130
Ind., Ill., Ky., etc.	53,400	44,900	275	916	8	606	213
Okla., Kans., Mo.	26,200	4,700	154	485	11	386	358
Texas Inland	1,400	....	20	104	6	207	322
Texas Gulf	1,400	20,000	24	917	3	1,390	552
Louisiana Gulf	2,400	14,500	9	137	....	154	92
Ark. and La. Inland	200	9,800	10	52	1	486	61
Rocky Mountain	7,000	400	71	81	....	260	50
California	400	25,700	203	494	35	409	106
Total	111,800	246,900	895	4,250	127	4,955	1,978

*Includes 104,000 bbls. run through pipe lines. †Includes 566,000 bbls. special naphthas.

CRACKING OPERATIONS

Fresh cracking stock charged to stills, barrels	37,670,000
Gasoline produced by cracking, barrels	16,478,000
Fuel oil produced by cracking, barrels	14,528,000

SHIPMENTS OF MOTOR FUEL BY PIPE LINES

(Thousands of barrels of 42 gallons)

	Aug., 1933	July, 1933	Aug., 1932	Jan.-Aug., 1933	Jan.-Aug., 1932
Motor fuel turned into lines	3,663	3,488	2,722	24,393	19,069
Motor fuel delivered from lines	3,660	3,523	2,632	24,410	18,799
Shortage	5	11	12	41	45
Stocks in lines and working tanks end of month	1,140	1,142	1,187	1,140	1,187

Kansas Fields

(Continued from Page 44)

320 bbls. in 12 hours. Sand is at 1,732-80 feet.

Anderson & Pence's No. 1-A Aldans, SW NE SW Section 17-24-13, was acidized at 1,610-20 feet and later pumped 34 bbls. in 24 hours.

Rex and others' No. 1-A Shook, NE SE NW Section 6-24-12, was drilling at 550 feet; Anderson & Pence's No. 2 Aldans, 300 feet south and 740 feet west of C Section 17-24-13, a location; Theta Oil Co.'s No. 9 Young, SW NE NE Section 10-23-13, drilling at 815 feet; Skelly Oil Co. and others' No. 25 Wick, NE SW SW Section 27-22-11, spudding

Kingman County

Skelly Oil Co. completed No. 1 Interurban Realty Co., CNL SW Section 30-27-10w, Cunningham district, Kingman County. It flowed 431 bbls. in seven hours, following a treatment with acid, and is estimated as a 1,000-bbl. well.

Edwards County

Atlantic Oil Producing Co.'s wildcat, No. 1 Bradbridge, C SE NW Section 1-24-16w, Edwards County, was drilling at 3,710 feet with 2,500 feet of water in the hole.

New Wildcat Activity

A number of scattered wildcats have started rigging up or drilling. Lario Oil & Gas Co.'s No. 1 Burrell, NW SW Section 15-14-2w, in eastern Saline County, was rigging up standard tools. Western Exploration Co. was drilling at 450 feet in No. 1 Andrea, SW cor. Section 30-15-12w, southeastern Russell County. Sinclair Prairie Oil Co. was rigging up on No. 1 Radetske, NE SE Section 9-16-11w, northeast corner of Barton County. Danciger and others were drilling deeper in a wildcat, No. 1 Roesler, SW NE Section 11-18-10w, northwestern Rice County. The old total depth was 1,975 feet and it was drilling at 2,220 feet. Langston and others had rig up for No. 1 Markle, NE SW Section 1-20-9w, Reno County. Atlantic Oil Producing Co. was drilling at 360 feet in No. 1 Willinger, C NE NE Section 18-22-11w, Stafford County.

California Fields

(Continued from Page 50)

cemented a 9⅝-inch water string at 5,237 feet. Several wells have been drilled on the McNally property but so far no deep production has been developed. Plymouth's well is in close proximity to present productive leases of Standard Oil Co. and is consequently more or less of an outpost.

Huntington Beach

Four wells were put on production in the Huntington Beach town lot area during the past week and a check of development work under way indicates probable completion of several more during the coming week. Petroleum Co.'s No. 1 fee was finished flowing 15,000,000 feet of gas per day from 4,718 feet early in the week but was completed flowing 2,394 bbls. of 25.6 gravity oil after a sand bridge at 4,350 feet had been removed and the hole cleaned out to bottom. Wilshire Oil Co., largest individual producer in the Huntington town lot area, added another producing well by finishing No. 33 Huntington flowing 1,330 bbls. of 24.6 gravity oil per day from 4,450 feet. Wilshire has a daily production of approximately 17,000 bbls. in the Huntington Beach Field. Elyod Oil Co. finished an excellent well a few days ago when No. 2 Huntington was brought in flowing 2,440 bbls. of 25.6 gravity oil and 1,470,000 feet of gas per day from 4,787 feet, the hole having been finished with a 4½-inch liner including 512 feet of perforated. This is Elyod's second completion in the town lot area of the Huntington Beach Field. Rosemar Oil Co.'s No. 1 Townsite, bottomed at 4,800 feet and finished with a 6⅝-inch liner carrying 778 feet of perforated, was brought in flowing 1,462 bbls. of 25.5 gravity oil and 1,900,000 feet of gas per day.

Texas Gross Production Report for Second Quarter of 1933

	Barrels	Value
A		
Allen, H. L., Fort Worth	3,643.81	$1,126.26
Almeda Oil Corp., Tulsa, Okla.	9,043.82	2,584.94
A. B. C. D. Oil Syndicate, Inc., Longview	18,138.38	4,252.60
Adams & Prince, Amarillo	4,428.83	1,290.35
Adams & McGahey, Amarillo	16,696.27	3,691.61
Acme Oil Co., Longview	27,162.72	8,195.85
Albany Oil Co., Breckenridge	2,935.34	1,313.50
Abraham, Earl, Burkburnett	1,450.22	671.14
Alpine Oil & Development Co., Alpine	2,217.17	571.22
Allen, J. W., Pittsburgh, Pa.	724.96	292.61
Alaska Petroleum Co., Amarillo	409.77	97.64
Ada Belle Oil Co., Batson	14,390.68	4,853.40
Allied Oil & Gas Co., Laredo	54,037.83	17,971.67
Abercrombie, C. L., Archer City	662.45	239.57
Adams, Harry, Co., Midland	22,462.09	8,385.24
Alco Royalty Corp., Tulsa, Okla.	31,540.63	9,985.29
Alamo Oil Co., Brownwood	298.00	189.00
Acorn Oil Co., Beaumont	4,431.04	1,659.77
Alamosa Oil Co., Inc., Amarillo	2,026.29	391.07
A. C. F. Oil Co., Wichita Falls	13,279.04	4,119.19
Aero-Gas Refining Co., Fort Stockton	1,662.00	286.85
Allbritain, F. J., Markley	759.34	298.22
Abernathy & Kirkpatrick, Tyler	27,882.24	7,263.82
Adams, T. C., Bethany, La.	2,668.58	842.49
Adams, T. C., Bethany, La.	4,501.89	1,415.93
Adams, T. C., Bethany, La.	1,762.10	502.86
Adams, W. E., Cisco	426.52	162.17
Allen, Perry, Waco	30,592.58	5,361.04
Aarco Oil & Gas Co., Baltimore, Md.	6,525.81	2,526.34
Adams & Lyles, Lockhart	66,871.82	18,799.67
Alma Petroleum Corp., Oklahoma City, Okla.	77,590.37	26,507.31
Abercrombie, J. S., Co., Inc., Houston	338,108.34	137,877.71
Adams, W. B., Wichita Falls	727.40	254.90
Alpha Petroleum Co., Houston	196,485.21	66,588.36
Amada Oil Co., Dallas	19,862.20	7,039.19
American Refining Properties, Wichita Falls	23,508.33	5,652.46
American Refining Properties, Wichita Falls (R.M.W.)	1,702.04	629.97
American Refining Properties, Wichita Falls (N.B.C.)	407.21	182.98
American Refining Properties, Wichita Falls (M.J.B.)	1,850.60	786.17
American Refining Properties, Wichita Falls (W.M.B.)	496.18	163.98
American Maracaibo Co., New York, N. Y.	44,097.13	12,431.63
Ambassador Oil Corp., Fort Worth	5,367.15	1,284.74
Atlantic & Pacific Oil Co., Gilmer	6,068.72	1,748.19
Amerada Petroleum Corp., Tulsa, Okla.	566,558.44	165,859.92
Arkansas Fuel Oil Co., Shreveport, La.	1,023,824.56	277,320.66
Anderson Drilling & Corp., Cisco	2,753.00	1,350.46
Arkansas-Louisiana Pipe Line Co., Shreveport, La.	1,441.41	545.64
Apollo Oil Co., J. L. Tweedy, Trustee, San Angelo	7,216.03	1,885.11
Ansac Oil Corp., Coleman	444.21	192.89
A. & M. Petroleum Co., El Paso	392.04	78.41
Anderson, O. T., and C. A. Daubert, Olney	1,862.21	735.23
Amicable Life Insurance Co., Waco	251.00	100.40
Anderson, A. R., et al, Amarillo	154.45	40.16
Arnold, C. K., Petrolia	698.30	267.17
Arrow Refining & Producing Co., Fort Worth	17,675.84	4,098.18
Arrow Refining & Producing Co., Fort Worth	4,843.14	1,015.47
Arrow Refining & Producing Co., Fort Worth	4,056.94	912.13
A. & P. Production Co., Houston	32,208.74	13,623.03
Arrowhead Oil Co., Dallas	563.11	210.44
A.-P. Oil Co., San Antonio	17,315.56	4,066.95
Arco Oil Co., Wichita Falls	17,046.11	4,847.18
American Central Oil Co., Fort Worth	6,133.18	1,909.70
Amazon Petroleum Corp., Henderson	48,092.12	11,023.04
Anderson & Charlesworth, McCamey	986.00	295.80
Andrews Petroleum Corp., New York, N. Y.	2,439.83	853.35
Apex Pipe Line Co., Inc., Shreveport, La.	32,458.29	10,091.86
Atkinson & Sandefer Oil Corp., Breckenridge	9,823.84	3,974.41
Antelope Creek Oil & Gas Co., Amarillo	2,158.93	413.30
Argus Oil Co., Austin	41.33	13.23
Ark Oil Co., Okmulgee, Okla.	7,971.02	3,007.97
Armstrong & Wallace, Cisco	920.83	403.39
Arrow Drilling Co. (M. J. Munn), Tulsa, Okla.	726.23	289.22
Artex Oil Co., Wichita Falls	187.90	72.92
Amatex Petroleum Co., Tyler	17,582.79	5,415.13
Ama-Gray Oil Co., Pampa	3,642.00	1,324.20
Art, J. L., Wichita Falls	215.46	90.10
Ames, E. W., et al, San Antonio	262.72	131.90
Atlas Production Co., Burkburnett	1,370.35	429.30
American Liberty Oil Co., Dallas	510,388.70	113,490.54
Atlantic Oil Producing Co., Dallas	2,336,301.29	679,911.73
Arkansas Drilling Co.'s No. 1 Alexander, B. T. Fitzhugh, receiver, Tyler	4,042.11	1,206.17
Asbury, Joe, and Rhodes & Highers, Breckenridge	4,793.06	2,039.68
American Liberty Oil Co. (L. R. Mungerpart), Dallas	13,314.64	2,407.82
B		
Barbare, Nick, Waskom	3,108.72	1,304.85
Badger Oil Co., Amarillo	11,583.69	4,219.12
Bailey & Trimble, El Dorado, Ark.	45,502.70	10,521.57
Baker, J. A., Breckenridge	837.38	319.27
Baker, J. A. and Mollie B., Breckenridge	3,489.00	1,256.04
Baker, James Blair, Jr., and C. F. Camp, trustee, "B" lease, Wichita Falls	7,788.18	2,765.61
Baker, James Blair, Jr., and C. F. Camp, trustee, "C" lease, Wichita Falls	660.16	245.59
Baker, James Blair, Jr., and C. F. Camp, trustee, "F" lease, Wichita Falls	648.96	250.28
Baker, J. F. and H. E., Breckenridge	1,837.00	771.30
Baker & Pardue, Breckenridge	14,551.13	5,049.85
Baker, Fred R. and Mollie B., Breckenridge	82.00	20.50
Baldwin, F. C. et al, Fort Worth	3,482.14	1,348.71
Baldwin-Sultan Oil Co., Walters, Okla.	5,475.24	1,598.50
Ball Oil Corp., Henderson	7,385.62	2,960.07
Barbara Oil Co., Chicago, Ill.	435.34	162.75
Barnes, J. B., Electra	4,350.15	1,443.54
Barkley & Conway, Ranger	2,603.29	1,050.28
Barnsdall Oil Co., Tulsa, Okla.	465,422.98	139,331.68
Foster Barnsley, Laredo	2,134.00	533.50
Barrett, Harry L., Ponca City, Okla.	9,688.27	2,342.22
Bartlett Production Co., Rockdale	230.11	98.96
Barnett, Ben G., Oklahoma City, Okla.	10,419.01	3,087.29
Barrett, G. P., Kilgore	21,443.37	4,674.22
Bashara Oil Co., Houston	3,352.33	1,407.98
Bashara, M. J., & Sons, Wichita Falls	880.62	220.23
Base & Dillard, Wichita Falls	26,592.78	8,217.73
Bates, R. P., Tulsa, Okla.	38,253.27	10,104.03
Bayless, A. A., Fort Worth	1,362.19	506.72
Bazzoon, G. A., Vernon	112.32	36.97
Bowles Oil Co., Corsicana	19,088.29	5,912.69
Bay Oil Corp., Tulsa, Okla.	154,163.64	45,170.69
Beams, Drew, Amarillo-Abilene	1,361.00	627.82
Beard, J. G., Duncan, Okla.	42,233.62	12,192.91
Beggs, George, Strip, Fort Worth	1,417.65	916.94
Bell & Graddy, Inc., Dallas	6,944.43	1,884.97
Bell, Claude, Dallas	1,310.33	655.17
Bell Oil & Gas Co., Riverbed Acct., Tulsa, Okla.	13,112.19	5,192.72
Belrice Oil Co., Dallas	35,954.52	7,590.66
Bentley, George R., Trustee, Grandfalls	1,247.81	336.91
Beren, J., et al, Dallas	5,361.00	1,541.86
Beth Oil Corp., Shreveport, La.	53,292.27	12,455.98
Bettison, Hillary N., San Antonio	2,876.69	937.26
Betty K., Inc., Dallas	83,553.00	21,595.25
Biel, William A., Von Ormy	18.19	7.64
Big Lake Oil Co., Pittsburgh, Pa.	1,174,964.19	386,760.47
Big State Oil Corp., Houston	1,146.88	439.16
Big Indian Oil & Development Co., Dallas	11,587.50	3,822.87
Bill & Dave Oil Corp., Shreveport, La.	19,572.36	5,118.97
Bishop Oil Co., San Francisco, Calif.	61,725.17	29,623.19
Black Cat Oil Co., Electra	648.05	243.25
Black, Harry W., Peoria, Ill.	6,462.06	1,702.06
Black, W. A., Midland	811.51	241.75
Blackstock, Harry L., Oklahoma City, Okla.	13,723.93	4,058.42
Blackstock Oil Co., Oklahoma City, Okla.	24,366.94	7,231.06
Blackwell Oil & Gas Co., Cushing, Okla.	97,539.56	25,692.22
Blalock, Richard W., Marshall	18,757.84	4,884.17
Blake Oil Co., Gladewater	30,905.00	5,712.74
Block Nine Oil Co., Wichita Falls	491.00	184.25
Bloxom & Nash, Henderson	30,000.00	9,405.00
Bluebonnett Oil Co., Wichita Falls	219.64	82.27
Blucher Oil & Gas Co., Tyler	340,439.48	77,505.17
Bohner, C. F., Kansas City, Kans.	35.16	13.36
Boardman-Ulrich, Corsicana	1,030.00	339.90
Bohner, Crenshaw & Whitehill, Burkburnett	6,209.57	2,801.11
Bohner, C. J., Burkburnett	7,418.34	3,414.24
Bohner, C. J., Oil Corp., Burkburnett	16,135.87	6,610.60
Boller, C. W., Wichita Falls	11,987.42	4,182.27
Boller, C. W., Wichita Falls	3,666.66	1,644.14
Bolin, D. H., Trustee, Wichita Falls	626.25	282.12
Bona, Joseph E., et al, Denver, Colo.	3,284.34	1,032.41
Bonds & Dillard Drilling Co., Longview	39,157.47	9,164.64
Bond, J. B., Longview	3,479.71	1,301.33
Bond, J. B., Receiver, Longview	4,180.98	1,128.00
Bond, J. B., formerly Bond & Gillespie, Longview	3,529.96	1,083.15
Bond & Johnson, Longview	10,264.67	2,807.19
Bond, J. B., and Republic Production Co., Longview	7,408.12	2,182.75
Bonner Co., Wichita Falls	12,279.82	4,551.57
Borealis Oil Co., Oklahoma City, Okla.	1,127.59	558.87
Bourbon Royalty Co., Dallas	1,517.70	518.42
Bowers Oil Co., Vernon	956.56	307.10
Bowman Oil Co., Rockdale	233.52	106.42
Bowser & Beckett, Dallas	7,972.22	2,822.46
Bowles, Robert, Oil Co., Houston	18,738.00	6,969.23
Boxrollium Oil Co., Houston	36,515.30	12,466.81
Brachman, S., Fort Worth	17,074.84	5,723.79
Bradstreet, L. G., Receiver, E. T. Walters, Fort Worth	12,312.05	4,669.25
Bradley, W. W., et al, Gladewater	16,381.63	14,428.27
Brady Bros., Minerva	515.68	221.75
Brandenburg, C. H., Holliday	389.31	202.44
Brazelton Bros., Graham	380.78	166.95
Brazos River Gas Co., Mineral Wells	21,786.97	8,386.25
Brewster, R. C., Receiver, Pecos	3,728.96	940.75
Bridges, Milton, Pleasant Hill, La.	4,204.00	1,167.01
Bridwell & Heydrick, Trustee, Wichita Falls	784.48	254.95
Bridwell Oil Co., Wichita Falls	140,405.00	44,715.44
Bristow, J. E., et al, San Angelo	800.86	356.58
Bristow, J. E., San Angelo	26,836.95	7,447.68
Britton & Gordon, Strawn	209.63	82.23
Brogan Oil & Gas Co., Tyler	21,590.78	5,625.87
Bromley Oil Co., Henderson	4,993.48	1,573.88
British American Oil Producing Co., Tulsa, Okla.	309,339.21	98,270.59
Brown, C. H., Longview	5,597.00	1,591.50
Brown, Mrs. Carrie L., et al, Orange	5,152.44	1,779.63
Brown Eagle Oil Co., Gladewater	26,596.12	8,662.45
Brown Farm Oil Co., Fort Worth	278.58	144.86
Brown, F. H., Shreveport, La.	17,227.89	4,485.77
Brown & Lickey, Wichita Falls	260.40	122.38
Brown, Dr. E. W., Estate, Orange	854.14	256.24
Brown, E. L., Fort Worth	3,862.37	1,154.19
Brown, R. J., Henrietta	5,193.96	2,263.99
Bryant, R. B., Dallas	2,193.25	875.35
Bryson Oil & Gas Co., San Angelo	5,014.10	2,463.59
Buck, George, Mirando City	1,802.90	661.85
Buck & Sandwich, Mirando City	2,608.38	1,035.21
Buchanan, A. A., San Antonio	24,492.13	7,728.95
Bussa Co., Inc., Vivian, La.	14,197.75	4,011.72
Bussa Co., nc., Vivian, La.	1,923.32	670.42
Burk Royalty Co., Burkburnett	17,462.86	6,093.68
Burns, L. T., Wichita Falls	69,791.41	27,106.58
Butler, J. A., Albany	121.00	48.56
Bullard, A. P., Oil Co., Atmore, Ala.	6,878.64	2,674.27
Bynum, W. W., Est., Rockdale	409.75	174.75
Bumpus, Ray, Gladewater	6,306.00	2,177.00
Byrd-Frost, Inc., Dallas	104,125.77	31,662.53
Buttram Petroleum Corp., Oklahoma City, Okla.	16,628.26	6,654.44
Burns, Elizabeth L., Wichita Falls	1,185.69	392.60
Burk Royalty Co., Burkburnett	9,311.92	6,233.17
Burk Royalty Co., Burkburnett	9,935.09	3,008.12
Burnham Rusk Giles Strip, Inc., Fort Worth	29,023.50	4,863.66
Butler-Calhoun & Boynton, Overton	81,545.22	13,286.63
Bynum & Palmer, Rockdale	80.66	34.68
Burnett & Foshee, Gladewater	6,235.49	1,933.00
Butler & Horne, Dallas	15,058.21	5,722.12
Burton Drilling Co., Dallas	10,741.78	4,022.80
Burkburnett Production Oil Trust, Baltimore, Md.	488.76	173.32
Byrd Oil Corp., The, San Antonio	13,959.96	4,510.34
C		
Cable Oil Co., Wichita Falls	6,298.61	2,745.45
Cabot Carbon Co., Boston, Mass.	890.91	310.91
Cady, C. C., Moran	84.36	23.63
California Co., The, Dallas	982,574.00	243,615.33
California Consolidated Oil Co., San Antonio	1,364.53	482.27
California Petroleum Corp. of Venezuela, Shreveport, La.	208,027.30	59,675.47
Callihan, George, Albany	1,976.78	794.16
Cal-Tex Corp., Kilgore	14,467.57	3,606.87
Cambrian Oil Co., Amarillo	7,914.78	3,124.97
Camp Lease, H. W. Roberts, Henderson (6-1-32 to 6-30-33)	33,315.32	18,074.21
Camp Oil and Gas Co., The, Dallas	45.36	19.96
Campbell, Alma, Fort Worth	903.03	328.81
Campbell & Tong, San Antonio	6,257.67	2,614.45
Canadian Oil Producing Co., Longview	13,626.63	4,475.84
Canadian Production Co., Longview	17,328.64	4,756.29
Canyon Oil & Gas Co., Inc., The, Cross Plains	2,439.07	1,089.47
Cardinal Oil Co., San Angelo	53,438.78	11,332.26
Carey, C. W., Wichita Falls	2,329.46	908.49
Carlin, W. W., Ranger	324.34	130.39
Carpenter, J. D., Olney	767.44	311.77
Carr, A. P., Gladewater	13,495.29	4,258.37
Carroll, J. E., Overton	2,645.10	790.26
Carroll & Blaine, Overton	2,645.10	790.26
Carter, Roy L., Wichita Falls	12,618.39	3,350.52
Carter, Thos. J., Tyler	7,456.77	2,862.67
Caruthers Co., San Antonio	701.14	200.86
Castelbury, S. A., Vernon	226.60	80.97
Cezeaux, P. C., Sr., Humble	3,760.00	1,241.49
Centennial Oil & Gas Co., Dallas	12,285.50	4,733.14
Central Commercial Oil Co., Tulsa, Okla.	16,367.86	5,058.59
Central Oil Co., Cameron	1,999.50	856.91
Central Producers, Inc., Mirando City	46,746.05	14,468.13
Chalk, Otis, Big Spring	4,024.10	976.72
Chambers & Edwards, Beaumont	7,351.07	2,239.85
Champlin & Bass, Inc., Dallas	192,576.39	61,256.31
Chapin, Ethel G., Tr., Mineral Wells	1,656.00	502.60
Champlin Refining Co., Enid, Okla.	76,226.69	23,988.03
Chandler & Carpenter, Olney	510.81	209.66
Charter Oil Co., Brownwood	6,228.80	2,829.16

	Barrels	Value
Chatham Oil Co., Tulsa, Okla.	8,802.70	2,256.50
Chenault, W. L., Amarillo	178.16	80.03
Cherokee Chief Oil Co., Gladewater	31,688.14	9,581.84
Chicago Oil Co., Dallas	10,182.30	3,057.40
Chiquita Oil Co., The, San Antonio	22,185.32	5,213.75
Choctaw Oil Co., Butler, Ala.	7,367.94	2,399.09
Christie, C. B., et al, Wichita Falls	2,991.41	1,149.94
Christie Bros., Wichita Falls	12,454.95	9,048.72
Cicero, J. B., San Antonio	42.71	10.68
City National Bank, Wichita Falls	637.68	239.85
Claggett & Evans, Mirando City	1,449.70	723.12
Clark, C. W., Wichita Falls	3,588.71	1,438.53
Clark, R. R., et al, Wichita Falls	22,084.12	8,580.04
Clark, R. R., Wichita Falls	4,118.35	1,879.96
Clark, F. C., et al, Overton	4,625.27	1,380.32
Clark, Robert L., Recvr., Dallas	2,742.17	917.22
Clark & Cowden Drilling Corp., Duncan, Okla.	84,561.81	25,106.63
Clark & Cowden, Duncan, Okla.	4,861.30	1,908.77
Clarkson, H. W., Buffalo, S. D.	7,172.19	2,578.50
Clarkson, William, Jr., Houston	2,665.32	973.30
Clay, J. D., Houston	18,282.00	6,514.51
Clay Dome Oil Co., Albany	439.87	155.24
Clayton Key Oil & Gas Co., Amarillo	3,215.60	928.65
Clear Lake Oil Co., Rockdale	430.22	184.99
Claude Drilling Co., Pampa	2,669.20	803.62
Clem Oil Co., Houston	256.25	105.61
Coffman, David E., Dallas (Partial)	2,174.32	650.86
Coffman, David E., & Wellington Oil Co., Dallas	12,462.88	3,949.20
Coffield, H. H., Rockdale	83.08	35.72
Coffield & Guthrie, Rockdale	2,299.49	632.88
Coffield & Lanning, Rockdale	21,523.05	6,661.08
Cohen, Aaron, Baltimore, Md.	7,396.41	2,606.29
Coffield & Hale Oil Co., Rockdale	374.68	161.11
Cole Petroleum Co., Laredo	6,728.37	3,195.76
Collie, B. F., Breckenridge	757.54	351.26
Collins, L. C., et al, Tulsa, Okla.	21,110.05	5,904.73
Collins, J. L., & Co., et al, Corsicana	19,492.02	5,925.51
Collins, W. J., Luling	9,528.10	2,799.35
Collins-Lanier Synd., J. M. Collins, Tr., Shreveport, La.	12,829.66	3,634.29
Colonial Oil Co., Fort Worth	12,793.33	3,696.54
Combs, Mrs. L. A., Fort Worth	255.15	91.02
Combined Oil Interests, W. H. Powell, Recvr., Fort Worth	47,838.38	13,947.47
Columbia Oil & Gas Co., Dallas	180,295.40	49,285.36
Comet Petroleum Co., Fort Worth	1,963.07	501.54
Concord Oil Co., Dallas	7,348.42	2,165.37
Comac Drilling Co., Wichita Falls	2,125.31	808.63
Condor Petroleum Co., Abilene	14,518.55	4,366.17
Connell, Wixson & Frazier, El Dorado, Kans.	728.95	233.26
Conner Oil Co., Wichita Falls	8,417.96	3,346.48
Consolidated Oil Co. of Texas, Wichita Falls	24,364.30	9,597.71
Conservative Oil Co., San Antonio	56,021.36	15,013.47
Consolidated Production Co., Fredericksburg	337.13	109.56
Continental Oil Co., Ponca City, Okla.	944,156.80	273,647.08
Conway Bros., Ranger	2,334.57	846.43
Coppock & Coleman, Iowa Park	6,395.61	2,482.78
Cooper, G. W., Wichita Falls	10,859.81	4,710.16
Cordova Union Oil Co., Fort Worth	57,792.73	16,436.11
Coronado Oil Co., Houston	21,721.70	12,911.81
Corbett, J. Q., & R. V. Tidwell, Graham	1,230.97	472.50
Cosby Producing & Royalty Co., Fort Worth	15,088.15	3,817.88
Cosden Oil Corp., Fort Worth	108,597.19	32,044.27
Cox, Edwin B., & Jake L. Hamon, Ardmore, Okla.	223,747.44	108,709.14
Cox, Edwin B., Ardmore, Okla.	882.60	312.77
C. R. & M. Drilling Co., San Antonio	5,034.28	2,986.91
Crabb & McNeel, Cross Plains	2,858.15	777.39
Cranfill-Reynolds Co., Houston	554,381.32	170,339.13
Craig & Lowrie, Pittsburgh, Pa.	890.93	290.41
Crisman, H., Abilene	400.00	100.00
Crisp, G. O., Fmy., D. J. Simmons, Kaufman	7,408.77	2,061.00
Croft & Connor, Inc., Fort Worth	4,381.21	1,439.28
Cron & Gracey et al, Houston	25,640.05	7,971.59
Crosbie, J. E., Inc., Tulsa, Okla.	1,890.37	430.92
Crown Central Petroleum Corp., Houston	26,296.82	7,997.37
Crown Central Petroleum Corp., Houston	20,970.71	7,996.48
Culver, George L., Tyler	2,700.00	607.50
Cullen Oil Co., Henderson	77,424.32	21,222.82
Cullum, F. P., Wichita Falls	15,455.99	5,898.23
Culbertson Co., Wichita Falls	5,163.86	2,015.70
Cunningham & McDonald, Loving	435.50	209.17
Cuno, Mrs. Bertha, Moran	853.03	299.68
Curtis, James R., Recvr., Longview	3,093.69	1,041.70
D		
Danciger Oil & Refining Co. of Texas, Fort Worth	345,686.96	115,396.74
Day & Hancock, Gladewater	11,204.76	2,864.25
Day & Co., Gladewater	6,526.81	1,824.16
Day & Armstrong, Gladewater	6,080.68	1,712.73
Dawson, C. K., Ponca City, Okla.	5,541.66	1,665.40
Daniel, M. E., Breckenridge	6,180.18	2,459.08
Davis-Henderson-Hamilton, Longview	7,068.63	2,217.96
Davis-Henderson, Longview	7,125.09	2,166.09
Davis Oil Corp., Vernon	22,034.41	8,755.85
Dale-Knotts Oil Co., Wichita Falls	293.90	113.14
Daniel Drilling Co., Wichita Falls	884.48	350.22
Daniel Drilling Co., Wichita Falls	2,359.72	999.12
Darby Petroleum Corp., Tulsa, Okla.	141,294.35	37,922.93
Dale & Crawford, Electra	577.18	225.42
Derby & Haines, Wichita, Kan.	933.42	234.52
Denney & Andrews, Breckenridge	247.00	117.22
Derosa Oil & Gas Co., Amarillo	4,916.99	1,515.36
Desp Oil Dev. Co., Wichita Falls	32,975.80	13,447.50
Demontrond Oil Corp., Tyler	127,879.29	28,161.85
Despot, George and Mike, Shreveport, La.	5,554.33	1,671.33
Despot, George, Tr., Shreveport, La.	2,698.34	858.94
DeArman Producing Co., Tyler	21,586.19	5,762.68
Delton Petroleum Co., Oklahoma City, Okla.	617.25	308.62
Deering, John A., Houston	31,878.12	9,575.77
Degener & Co., Inc., Tyler	3,666.48	1,166.00
De Lano Oil Co., Henderson	4,386.67	1,295.86
Dean & Adkisson, et al, Fort Worth	19,409.32	5,694.31
Dennis, J. S., Moran	1,183.69	456.97
Desp Rock Oil Corp., Tulsa, Okla., E. H. Moore & Roy T. Potter, Recvrs.	159,732.22	47,004.39
Dearing, R. H., & Sons, Dallas	30,165.00	9,216.69
Deep Rock Oil Co., Tulsa, Okla.	8,777.52	2,606.65
Delta Drilling Co., Longview	27,732.74	7,055.29
Dowell, B. G., Batson	4,989.06	1,548.79
Dorian, R. P., Wichita Falls	1,501.45	674.66
Dink Oil Co., Atmore, Ala.	6,406.48	2,137.13
Double L Oil Co., The, Tyler	209,925.55	52,916.13
Dickey Bros., Albany	579.00	118.64
Dorough-Smith Oil Co., Marshall	16,161.56	4,352.43
Dillard Oil Co., Wichita Falls	38,656.54	10,185.84
Dorfman, Sam Y., Longview	4,799.96	1,794.30
Douglas Production Co., Electra	2,417.61	1,012.47
Douglas Bros. Oil Co., Electra	732.62	377.35
Douglas Bros. & Johns, Electra	1,324.90	589.91
Dixon Creek Oil & Refining Co., Wichita Falls	92,867.42	28,654.44
D. & L. Production Co., Houston	58,700.59	28,270.69
Dorfman, Sam &, et al, Longview	4,619.37	1,522.10
Dimham Oil Corp., Shreveport, La.	78,643.31	14,474.42
Douglas, Jesse L., Moran	487.82	177.99
Duffield & Howard Oil Co., Tulsa, Okla.	450.00	150.82
Driscoll, R., Est., Corpus Christi	16,127.00	4,981.33
Dunlop, Robert, Ponca City, Okla.	1,006.46	342.66
Dunlop, Robert, Ponca City, Okla.	940.56	317.59
Duluth-Arrowhead Oil Co., St. Louis, Mo.	8,116.00	2,565.94
Duluth-East Texas Oil Co., St. Louis, Mo.	15,965.00	4,905.21
Devonian Oil Co., Tulsa, Okla.	295,666.35	55,093.48
Dunn, G. C., Recvr., T. H. P. Duncan Lease, Dallas	9,991.87	3,287.33
Dolores Oil Corp., Tyler	14,409.00	4,030.95
Dunigan Bros., Breckenridge	4,986.00	1,482.58
Duke, J. A., Burkburnett	457.40	231.25
Duke, W. R., Wichita Falls	11,086.05	3,364.23
Dunning, Wm. H., Jr., Fort Worth	4,600.06	1,609.40
Duquesne Oil Corp, Eastland	304.45	102.13
Dudley S. Golding, Dallas	2,838.62	1,152.70
Dunn, W. C., Jr., Independence, Mo.	8,278.23	2,389.56
Dunham, Carl, Tyler	18,211.81	4,933.82
Duval Oil Corp., San Antonio	48,554.36	19,421.77
Dyck Oil Co., Tulsa, Okla.	105,738.78	27,030.79
Dunaway Brothers, Pampa	997.55	256.02
Duncan & Holt, Dallas	25,575.80	6,703.93
E		
Ellis & DuBose, Fort Worth	852.05	236.49
Edgar, Joe, Georgetown	5,129.50	1,732.79
Earle, E. S., Fort Worth	7,250.74	2,072.72
El Rio Oil Co., Amarillo	301.49	57.07
Eastland Oil Co., Fort Worth	42,915.80	12,060.97
Easter, Dan, and E. J. McCurdy, Jr., Fort Worth	4,662.08	1,176.91
Elm Oil Co., Tulsa, Okla.	7,216.38	2,251.60
Edson Petroleum Co., Houston	6,358.57	1,693.14
Eclipse Oil Co., Beaumont	27,360.80	11,864.31
Eckert & Son, San Antonio	14,533.24	4,859.27
Eddleman & Payne, Inc., Fort Worth	1,667.77	838.26
East Batson Oil Co., Batson	4,095.90	1,379.44
Edwards, R. J., Oklahoma City, Okla.	149.87	67.09
Eckert, F. H., San Antonio	532.65	166.81
Empire Gas & Fuel Co., Maine, Bartlesville, Okla.	864,504.23	240,666.26
East Whaley Oil Co., Longview	2,828.99	1,067.13
Edwards Drilling Co., Houston	7,705.84	2,571.53
Elsep Oil Co., Tyler	20,134.86	6,443.16
East Shore Oil Co., Henderson	22,977.11	7,528.96
Ebony Oil Co., Henderson	14,661.88	3,316.88
Electra Production Co., Inc., Electra	325.77	161.21
Easter, Dan, McCamey	5,085.04	2,072.52
Elrod, Beabout & Sullivan, San Angelo	1,841.67	739.97
Emerald Oil Co. of Texas, Winfield, Kans.	3,708.58	951.40
E. & D. Oil Co., Inc., Shreveport, La.	24,826.88	7,406.22
East Texas Oil Refining Co., Dallas	697,313.74	181,095.85
Eubank, R. O., and H. K. Coleman	1560.00	710.10
Etnyre Petroleum Corp., The, Dallas	2,996.92	922.90
Engel, E. A., Albany	3,920.69	1,496.14
Eppenauer, A. R., San Angelo	6,722.77	1,778.42
Evans, W. L., Tyler	3,706.17	2,632.08
Everts Drilling Co., Dallas	104,372.30	30,462.46
Erie Investments, Ltd., of Tex., Toronto, Canada	296.19	127.28
Export Petroleum Corp., Fort Worth	5,443.21	1,582.78
Ernest Oil Co., Rockdale	74.69	32.12
Evans, Sam, Mirando City	1,813.52	568.78
Everitt Oil Co., Tulsa, Okla.	14,304.19	4,040.69
Everett & Phillips, Gladewater	5,984.81	1,738.24
Everett, Carl B., Gladewater	15,223.57	6,579.21
F		
F. & M. Drilling Co., G. L. Gillespie, receiver, Longview	34,753.74	12,905.71
Falls Refining Co., Inc., Wichita Falls	3,798.50	1,541.07
Federated Oil Co., Wichita Falls	21,646.87	5,786.55
Fair & Thompson, Tyler	16,621.93	5,590.33
Farley, J. W., Fort Worth	56,084.92	15,210.33
Falls Production Co., Wichita Falls	6,336.21	2,563.43
Faith Oil Corp., Wichita Falls	50,487.00	15,983.56
Ferrell & Ehrhardt, Houston	8,740.39	3,320.18
Falcon Co., Fort Worth	53,337.58	16,378.87
Falvey, J. C., Longview	12,025.04	3,605.54
Felsenthal, S. J., Longview	20,552.70	4,208.28
Fair & Thompson, Tyler	11,300.15	3,580.34
Felson Oil Corp., Houston	41,177.32	15,026.52
Feltex Oil Corp., Houston	118,987.39	40,469.66
Federal Oil Co., Houston	11,727.64	3,585.66
Fair & Thompson (Baldwin Sultan Oil Co.), Tyler	2,091.11	2,049.33
Farish & Ireland Lease, Houston	4,507.54	1,383.21
Faulkner, F. V., Dallas	2,516.16	1,013.43
Feldman, D. D., Dallas	6,836.43	2,516.61
Fair, R. W., Oil Co., Tyler	21,872.56	8,514.07
Fansler, Harry L. (O. & A. Oil Co.), Laredo	1,129.89	379.72
Farley, George E., McCamey	10,534.45	2,646.26
Farlyn Oil Co., Houston	40,497.15	13,396.48
F.H.E. Oil Co., Fort Worth	75,760.17	26,857.30
Fain-McGaha Oil Corp., Wichita Falls	272,647.85	90,331.34
Fine Oil Co., Corsicana	5,626.00	1,569.20
Fifty-Five Oil Co., Gladewater	6,639.07	1,990.56
Finston, Mark, special account, Tulsa, Okla.	2,283.99	967.76
Fleming & Kimbell, partnership, Fort Worth	2,985.81	792.64
Fleming-Kimbell Corp., Fort Worth	58,012.36	21,033.79
First National Bank, trustee, Fort Worth	4,162.80	1,774.31
Flynn, W. B., Inc., Beaumont	1,005.64	447.52
Fish, Jim, Archer City	1,015.98	339.39
"Fifty-Six" Petroleum Corp. of Texas, Miles City, Mont	17,639.87	5,356.98
Fullwood, Travis, Corsicana	7,619.56	2,809.78
Foshee, A. B., Gladewater	2,765.38	667.89
Forest Oil Corp. (W. B. Swearingen, receiver for), Luling	2,701.09	791.35
Forster Oil Co., Pampa	4,138.49	1,192.84
Forbess, W. C., Electra	255.40	109.84
French Oil Corp., Laredo	21,966.78	7,098.38
Four Oil Co., The, Wichita Falls	173.95	70.78
Foundation Oil Co., Tulsa, Okla.	13,431.30	3,868.65
Fox & Adams, Burkett	9,358.10	3,336.11
Freels, Hugo, Pecos	896.00	194.00
Franklin, Wirt, Ardmore, Okla.	117.12	44.22
Fresno Oil Co., Burkburnett	28,649.32	7,536.99
Fultz, F. B., et al, J. J. Scott farm, Graham	1,045.77	432.42
Foshee, A. B., Gladewater	2,619.46	875.48
Foshee Refining Co., Gladewater	159,900.19	24,628.06
Fox & Butler, Dallas	8,557.58	2,755.95
French, P. K., Houston	613.00	318.53
Foree, R. L., Seminole, Okla.	302.25	93.46
Frances Oil Co., Kilgore	23,608.28	6,149.07
G		
Gant & Wegener, Ardmore, Okla.	3,322.56	1,036.41
G. & A. Oil Co., Dallas	12,863.96	3,917.40
Gardner, Wilson & McCaldin, Wichita Falls	452.18	206.18
Galvez Oil Corp., Tulsa, Okla.	80,490.85	25,353.34
Galis Bacon Lea, Wichita Falls	2,227.03	803.25
Gaskey, J. R., trustee, Henderson	2,538.27	821.77
Gem Oil Co., Fort Worth	6,106.78	2,542.57
Garrett, J. M., Longview	1,684.96	861.24
Gardner Brothers, Wichita Falls	2,328.21	714.30
Gaynita Oil Co., Shreveport, La.	12,991.09	2,600.82
Geyer, Adolph A., and R. G. Storey, Dallas	6,256.80	1,534.75
Gaither Production Co., Rockdale	449.38	191.79
Gallagher & Lawson, Cisco	668.84	283.92
Gates Oil Co., Ardmore, Okla.	1,301.80	468.62
Glasscock, Lonnie, Longview	21,173.49	6,760.83
Gaskill, S. A., Tulsa, Okla.	1,313.78	544.40
Gaskill, M. E., Tulsa, Okla.	13,654.54	3,567.78
Gladewater Refining Co., Gladewater	227,007.05	45,401.41
Gatlin Oil Co., San Antonio	6,715.20	2,674.50
Gilman, R. F., and J. L. McMurray, Cisco	8,075.66	3,129.42
Gandy, L. O., Tyler	2,073.25	609.51
Glasscock, C. G., Longview	30,800.82	8,242.36
Gilman & Conway Brothers, Ranger	2,850.86	1,096.58
Gillman, J. L., and M., Amarillo	1,297.52	418.89
Glass Brothers, Rosebud	495.56	213.09
Gilcrease Oil Co., Tulsa, Okla.	48,051.62	13,903.84
Ginter-Jones Oil Co., Nacogdoches	314.36	97.32
Ginter-Lange Oil Co., Nacogdoches	956.02	303.01
Glasscock, Rosa V., Longview	11,251.19	3,232.48

	Barrels	Value
Golden West Oil Co., San Antonio	6,328.37	1,737.20
Gist-Way Oil Co., Albany	1,150.40	455.58
Goodwin, et al (Clyde H. Hall, receiver), Longview	3,850.64	1,076.56
Gladis Oil Co., Saratoga	2,260.25	587.33
Goldsmith, N. D., Olney	5,546.17	2,497.18
Gifford, G. A., Putnam	117.95	54.25
Goodnight-Donald Oil Corp., Dallas	12,652.50	4,158.62
Gohman Oil Co., Rockdale	142.04	61.41
Glover, S. D., Vernon	1,865.00	674.90
Gillum-Florey & Warren, Overton	13,120.00	3,842.77
Glenridge Oil Corp., St. Louis, Mo.	3,622.36	1,743.99
Gold Star Oil Co., Ardmore, Okla.	4,619.65	1,391.97
Gilliland Refining Co., Gladewater	135,289.00	23,451.95
Gordon Oil Co., Inc., Ann B., Dallas	1,776.70	722.72
Golding & Cochran, Dallas	24,694.68	9,338.93
Gorsuch Oil Co., Abilene	1,955.54	714.37
G.-I. Oil Co., Wichita Falls	3,920.18	1,412.97
Goodwin, P. B., Gladewater	6,420.00	1,245.18
Goodwin, P. B., Gladewater	22,753.00	5,146.54
Godlin, Louis, Gladewater	1,145.74	2,364.90
Group No. 1 Oil Corp., Fort Worth	674,867.55	217,076.43
Great Eastern Oil Co., Dallas	15,371.49	4,244.07
Guiberson, S. A., Jr., Dallas	9,884.32	2,556.94
Guiberson Oil Co., Dallas	21,514.46	22,320.35
Graite Oil Trust No. 2, Monrovia, Calif.	36,781.87	6,799.40
Guthrie, George, San Antonio	6,585.53	1,591.63
Graham, M. K., trustee, Graham	1,170.74	379.36
Gray & Adams, Inc., Gainesville	957.50	265.99
G. & R. Oil Co., San Antonio	6,179.29	1,861.93
Granite Oil & Gas Co., Electra	249.14	116.25
Gulf Coast Drilling & Production Co., Houston	300,459.75	141,623.07
Grayburg Oil Co. (Frank E. and E. L. Kistler, receivers), San Antonio	88,822.22	23,775.00
Grassroots Oil Co., Fort Worth	539.39	247.75
Grisham-Hunter Corp., Abilene	65,408.19	20,825.11
Grayback Development Corp., Wichita Falls	2,319.25	836.44
Guelph-Texas Oil Synd., (P. D. Bowlen), Overton	36,284.65	5,141.21
Graham, Charles, Myra	765.52	225.87
Green & Owens, Brownwood	930.52	395.14
Grady, Mary E., Electra	1,196.02	509.35
Great Plains Oil & Gas Co., Tulsa, Okla.	.....	.....
Great Western Oil Corp., Tyler	15,291.38	4,549.93
Gregg Oil Co., Gladewater	39,498.51	11,690.84
Green Production Co., Fort Worth	15,314.78	4,036.43
Golding, Dudley S., Dallas	3,838.62	1,152.70
Gulf Production Co., Houston	8,438,842.00	2,420,420.74

H

H. B. J. Oil & Gas Trust, Baltimore, Md.	887.34	346.92
Haddaway, R., et al, Fort Worth	6,795.37	1,812.63
Haddaway, R., et al, Fort Worth	15,302.55	4,713.50
Hall, Lowrey, Dyer & Kerr, Goose Creek	352.24	137.37
Hamill & Hamill, Bay City	74,861.11	27,837.27
Hamill-Smith Oil Corp., Houston	57,408.50	14,114.64
Hamilton, W. L., Bridgetown	5,466.35	1,810.77
Hamon, Jake L., Ardmore, Okla.	17,325.57	6,864.66
Hammon, W. H., Wichita Falls	12,628.45	5,025.38
Hammon & Heyser, Wichita Falls	7,114.31	2,460.64
Hammond Oil Co., Fort Worth	29,183.53	8,844.08
Hammond & Waggoner, Wichita Falls	295.16	153.47
Harmond, Mamie S., and Fred P. Branson, Oklahoma City, Okla.	3,703.41	1,146.30
Hankamer & Cochran, Sour Lake	25,418.37	4,715.85
Hankamer & Co., Earl C., Sour Lake	233.22	72.50
Hanlon Gasoline Co., Tulsa, Okla.	4,078.81	1,510.39
Hankamer & Lee, Sour Lake	5,426.66	1,471.65
Hanbury, Harry, Pasadena, Calif.	56,236.38	16,603.89
Hardy Oil Co., Wichita Falls	1,384.38	536.02
H. & H. Drilling Co., Gladewater	67.00	29.48
H. & H. Drlg. Co. and J. L. Douglas, Gladewater	236.00	95.84
H. B. W. Oil Co., Bagdad, Fla.	16,824.11	4,260.16
Hamilton, Walter R., Tr., San Antonio	2,615.05	931.56
Harcher Oil Co., Kilgore	5,393.16	1,065.46
Harper, R. S., Tyler	6,373.11	1,613.42
Harper Petroleum Corp., Bryson	8,834.01	2,856.67
Harris, L. M., John M. Stephens, Rcvrs., Tyler	5,856.00	1,244.70
Harrison Oil Co., Houston	9,544.91	5,166.91
Harrison, J. B., Big Spring	21,250.24	3,508.34
Piner, R. T., Tr., L. C. Harrison, Big Spring	7,763.84	1,705.43
Harris & Simons, Tulsa, Okla.	3,524.95	934.45
Harwell, E. P., Tulsa, Okla.	615.75	272.92
Haskell, Frank, Tulsa, Okla.	613.95	230.61
Hastings, Allen & Craft, Kilgore	4,197.00	995.70
Hawkins, J. C., J. M. Falson, Tyler	5,244.29	1,932.86
Hawkins, W. W., Houston	12,570.64	5,385.33
Hawkins, W. L., Wichita Falls	3,192.13	1,340.48
Hawley, J. A., Est. K. Hawley, Ottawa, Ontario	89.02	29.71
Hawkeye Petroleum Corp., Longview	59,735.33	18,777.66
Hayes, Reese L., Olney	809.61	317.34
Hays, F. C., Tr., Tulsa, Okla.	496.08	207.14
Hayes, M. A., Olney	1,189.96	493.15
Haynes Drilling Co., Inc., Shreveport, La.	112,824.38	38,967.92
Hayer Oil Co., Fort Worth	467.49	153.15
Hedges, C. T., Megargel	988.56	399.90
Hedrick-Camp Drilling Co., Dallas	2,784.90	907.24
Heep Oil Corp., South Gulf Oil Corp., et al, Houston	79,273.27	29,036.22
Heidrich, E. C., Jr., Peoria, Ill.	1,038.76	233.09
Hefley, McIntosh & Thomas, Cameron	423.89	165.00
Helvetia Oil Co., San Antonio	7,839.12	3,163.56
Hemby, J. M., Electra	673.89	287.47
Henderson & Holden, Wichita, Kans.	5,571.64	1,746.95
Henry Oil Corp., Luling	16,030.65	4,765.69
Henderson County Pipe Line Co., Overton	165,540.82	25,600.39
Henson, Odell, Okmulgee, Okla. (12-31-32)	8,922.13	9,109.31
Henson, Odell, Okmulgee, Okla.	12,118.24	3,362.75
Hetherington, Fred, Fort Worth	1,472.08	422.64
Herring, S. C., Brownwood	259.00	134.89
Herbert Oil Co. of Texas, Fort Worth	3,831.17	1,459.36
Herrogan Oil Corp., Pampa	3,587.08	1,066.54
Heyser & Heard, Dallas	54,671.70	16,445.53
Heydrick, L. C., Wichita Falls	3,515.39	1,355.24
H. & L. Well Co., Inc., Goose Creek	4,769.22	1,730.33
Hickman, Lester, Dallas	3,685.49	1,018.18
Hickok Producing & Dev. Co., Toledo, Ohio	79.61	19.87
Hickey, T. J., et al, Corsicana	56.33	27.02
Hickory Oil & Gas Corp., Fort Worth	762.29	335.24
Hieserman Oil Co., Iowa Park	729.63	323.49
Highland Oil Co., San Antonio	40,320.56	12,447.01
Hindman, G. W., et al, San Antonio	7,551.75	2,214.82
Hinchliff, W. W., and J. L., Mexia	6,757.37	1,799.74
Hines, Harry, Wichita Falls	1,683.12	641.52
Hinton, W. B., Lockhart	45,904.14	12,749.95
Hinson, G. D., and R. V. Tidwell, Graham	6,111.94	2,128.49
Hitchman & Howard, Inc., San Antonio	1,236.93	399.13
Hitchcock, E. C., & Son, Midland	8,316.59	2,105.57
Houston Oil Co. of Texas, Wadley, J. E., J. P. Evans, Houston	9,074.81	2,655.15
Hobbs, Ferguson & Neeley, Tulsa, Okla.	89.83	29.26
Hobbs Oil Co., Tulsa, Okla.	1,222.76	456.44
Hoben & Salmon, Nocona	550.90	146.92
Hobson & Vorhees, Frost Woodhull, Rcvr., San Antonio	379.12	123.44
Hodges, M. E., Kilgore	6,188.61	1,936.83
Hoffman & Page Co., The, Eastland	8,117.47	3,500.81
Hoffman, P. L., Cisco	73,309.42	38,249.17
Holbrook & Woods, Wichita Falls	3,347.76	1,306.35
Holcombe, Thos., Wichita Falls	569.91	229.87
Holifield, Wm. F., Fort Worth	7,776.60	1,656.37
Holloway, W., Gladewater	4,779.00	1,682.15
Holmes Oil Co., Baird	1,318.17	557.94
Holmes Bros., "Moore," Amarillo	2,214.92	760.31
Holmes Bros., "Quinn," Amarillo	10,364.35	3,229.59
Holmes, Hill, Seibold & Holmes, Amarillo	10,095.69	3,107.73
Home Gas Co. of Cushing, Okla.	1,062.40	202.13
Hooper Oil Corp. and Rutherford Oil Corp., Conroe	49,676.00	20,447.82
Hope Oil & Gas Co., Fort Worth	7,407.91	2,679.47
Hopper, Walter E., Shreveport, La.	1,169.28	500.64
Hopper, W. T., Burkburnett	440.06	217.95
Horn, T. W., Houston	180.00	57.60
Horseshoe Lease Synd., Dallas	15,905.93	4,951.70
Horne Oil Co., Houston	15,491.54	5,996.65
Horwitz & Oldom, Wichita Falls	993.63	422.81
Houston Gulf Gas Co., Houston	3,752.23	1,223.97
Houston Production Co., Houston	60,246.88	23,499.75
Howard, Duffield & Berlin, Tulsa, Okla.	650.11	205.12
Howard Petroleum Corp., Tulsa, Okla.	75,597.80	22,717.16
H-Y Oil Co., Inc., Fort Worth	16,684.38	4,543.59
Huber, J. M., Petroleum Co., Borger	44,070.98	8,514.89
Hudson, G. C., Tyler	15,308.80	3,942.05
Huey, Ora, Borger	2,646.36	675.58
Huffman Oil Corp., Amarillo	1,024.22	190.34
Huggins Oil Co., Wichita Falls	1,807.40	795.84
Hughes, James B., Bloomington, Ill.	6,387.16	1,965.22
Hughes, J. K., Oil Co., Mexia	9,179.79	3,375.20
Hull, L. V., Wichita Falls	2,671.99	1,063.11
Hughes, K., Tyler	13,190.46	4,103.14
Hunt Production Co., Tyler	703,883.16	193,641.11
Hunt, Sherman, et al, Tyler	4,360.05	1,368.22
Hunt & Landrum, Dallas	2,757.21	717.63
Hunter Oil Corp., Chicago, Ill.	15,633.18	5,472.15
Hunter, T. F., Wichita Falls	12,709.02	4,544.50
Hutchinson Drilling Co. and J. C. Alexander, Borger	5,331.27	1,554.87
Hyer, Fred, Fort Worth	11,666.28	2,912.07
Hynes, F. P., et al, San Antonio	22,791.06	7,322.62
Hunter & Rowe, Dallas	7,895.58	1,984.56
Humble Oil & Refining Co., Houston	11,848,209.28	3,830,082.68
Hynd, A. C., Buffalo, N. Y.	4,197.16	1,456.50

I

Ilfred, Arthur C., Las Vegas, N. Mex.	11,674.37	3,344.73
Imperator Oil Corp., Dallas	22,235.93	7,182.87
Imperial Petroleum Co., Dallas	13,228.10	4,282.26
Indian State Oil Co., R. L. Tennant, Rcvr., Dallas	7,680.96	1,909.32
Indian Ter. Illuminating Oil Co., Bartlesville, Okla.	23,528.74	9,181.94
Infield Petroleum Co., Austin	1,786.24	864.32
Intercoastal Oil Co., Houston	26,860.27	10,570.26
Invincible Oil Co., Los Angeles, Calif.	33,222.78	7,008.53
Iotex Oil Corp., Winterset, Iowa	19,134.34	5,587.87
Irick Oil Co., Waskom	79.93	19.98
Iron Mountain Oil Co., The, Fort Worth	8,480.05	2,964.14
Irish Oil Co., George Callihan, Albany	426.80	106.50
Irish Oil Co., The, Tyler	1,408.00	563.20
Ironrock Oil Co., Gladewater	11,739.60	3,677.46
Island Oil Co., Houston	92,271.34	25,367.50

J

J. O. Oil Co., Tyler	4,366.56	1,153.22
Jackson, T. H., Sipe Springs	345.42	86.35
Jackson, Wise & Markham, Sapulpa, Okla.	15,999.12	4,986.74
Jackson, Wise & Snedden, Inc., Sapulpa, Okla.	98,439.43	29,089.61
Janellen Oil Co., Tulsa, Okla.	129.00	46.47
Jenkins Oil Corp., Hamilton Petroleum Co., Joint Acct., Dallas	37,943.16	11,306.50
Jones, J. E., Wichita Falls	1,084.40	417.82
Jamison, Pollard & Forster, Coleman	8,021.48	2,673.63
Julian, C. C., Oil & Royalties Co., J. Kingsbury, Jr., Co., Anc. Rcvr., Fort Worth	7,292.56	2,447.92
Julian, C. C., Oil & Royalties Co., J. F. Lucey, Rcvr., Dallas	25,586.63	7,725.01
Johnson, H. L., Dallas	8,937.25	2,806.56
Johnson, J. M., Sweetwater	611.00	183.69
Johnston, T. A., Tr., and John Owen, Tr., Tyler	16,533.65	5,046.44
Jones-Doss Oil Co., Oklahoma City, Okla.	53,704.19	14,850.82
Jones, E. W., and F. D., Dallas	21,024.46	5,985.94
Jones, J. A., Moran	94.00	31.96
Jones & Oates, Amarillo	1,196.00	298.00
Johnston, T. A., Tr., Tyler	4,842.17	1,530.92
Johnston, T. A., Tr., Tyler	4,340.16	1,237.91
Johnston, T. A., Tr., Tyler	3,199.44	1,049.97
Johnston, T. A., Tr., Tyler	3,530.63	1,515.83
Jones, W. C., Pampa	2,912.81	993.77
Jones, W. R., et al, Wichita, Kans.	22,013.45	7,056.23
Judson Oil Co., Tulsa, Okla.	3,615.79	1,292.12
Julia Oil Co., Sour Lake	2,396.73	841.68
Jones, Edwin M., San Antonio	128,474.51	41,431.95
Jones, Hugh, Burkburnett	1,549.80	615.04
Jule, Alford, trustee, Tyler	34,095.74	25,892.47

K

Kahle, Gracey & Diver, Dallas	1,570.66	419.43
Karona Oil Co., Corpus Christi	7,248.77	2,249.27
Katter-Manziel, Gladewater	6,504.28	2,251.46
Kay, A. W., and W. B. Fultz, Graham	1,125.76	470.96
Kavanaugh Petroleum Co., Houston	3,658.16	1,298.77
Keener Oil & Gas Co. of Texas, Tulsa, Okla.	1,768.72	666.38
Kelleher, H. M., Wichita Falls	791.83	250.35
Kemrow Co. & Bailey, Wooster, Ohio	9,044.59	3,367.21
Kent Refining Co., Corsicana	5,726.77	2,456.66
Kenwood Oil Co., McAlester, Okla.	11,741.10	3,870.29
Kent, G. C., Corsicana	13,585.64	5,314.18
Kathleen Oil Co., McAlester, Okla.	28,047.47	8,163.59
Kerr, E. E., Houston	6,749.27	1,887.47
Kerr, T. P., Corsicana	742.75	275.38
Kewanee Oil & Gas Co., The, Titusville, Pa.	221,344.69	70,225.72
Key, Dolly Bell, Marshall	6,843.75	2,116.48
Key, H. P., et al, Kilgore	3,595.29	955.73
Key, H. P., et al, Kilgore	3,524.58	966.26
Keystone Production Co. of Texas, Fort Worth	1,689.18	644.35
Kilgore Refining Co., Inc., Kilgore	8,256.10	3,370.57
Kilgore Refining Co., Inc., Overton	166,486.69	29,763.90
Killam, O. W., Laredo	34,882.92	12,338.90
Kimbell, C. T., & John L. Bostic, Burkburnett	4,395.01	1,533.83
Kimbell, Geo. T., Burkburnett	3,215.49	1,151.13
Kimmell, W. O., Wichita Falls	1,883.62	782.74
Kimmell & Wooftter, Wichita Falls	3,211.04	1,148.73
King & Daniel, Wichita Falls	2,352.93	920.91
King, T. A., and E. Williams, Brownwood	282.00	114.00
Kingwood Oil Co., Okmulgee, Okla.	39,730.64	11,673.39
Kinnebrew & Simpson, Shreveport, La.	26,707.89	5,487.37
Kirby Petroleum Co., Houston	98,341.71	26,240.02
Kiser & Fleming, Albany	1,282.50	544.10
Kittery Oil Co., Olney	7,279.16	2,716.51
Kleiner, Charles J., Cisco	39,132.91	14,790.83
Kleiner, John H., Cisco	151.78	58.56
Kluncke, Geo., Tr., Von Ormy	1,013.83	265.23
Knight, P. J., and R. H. Guinn, Breckenridge	318.73	146.61
Knotts, Nona A., Wichita Falls	591.54	233.11
Knox, Charles E., Enid, Okla.	4,878.47	2,149.17
Knox, D. M., Graham	14,635.01	5,720.03
Knox, W. E., Kilgore	14,541.00	4,354.49
K. O. T. Oil Co., Arp.	44,297.28	13,551.81
K. & P. Oil Co., Tyler	31,664.83	5,459.03
Kobert Oil Co., Oklahoma City, Okla.	12,089.71	3,111.39
Koenig, Max W., Oakland, Calif.	12,188.68	3,156.47
Kolp, C. F., et al, "A," Electra	1,329.42	332.36
Kolp, C. F., et al, "B," Electra	6,119.22	2,006.00
Kolp, C. F., Electra	10,653.10	2,954.13
Kuhlemeier-Kleiner Oil Co., Cisco	314.87	155.69
Kurk Oil Co., Somerset	350.72	99.23

L

Laco Production Co., Lockhart	15,295.99	4,894.72
Lake, W. S., San Francisco, Calif.	522.23	224.56

	Barrels	Value
Lake View Oil Co., Sour Lake	8,076.43	2,545.76
Lanier, Exa, and S. P., Gladewater	5,678.11	1,420.91
LaSalle Petroleum Co., W. J. Schnur and Ph. D. Williams, Rcvrs., Tulsa, Okla.	4,224.29	1,499.58
Landreth Production Corp., Fort Worth	66,623.36	16,489.19
Laird, S. S., Kilgore	36,053.72	11,003.99
Laredo Oil Co., Inc., Laredo	1,497.59	734.60
Lacy Petroleum Co., Inc., Longview	20,386.76	6,003.31
Laughman, L. W., Beaumont	285.87	100.94
Laird, S. S., Kilgore	1,990.00	797.96
Lackey, W. G., Co., Bourbon Royalty Co. of Dallas, Tulsa, Okla.	1,122.25	443.74
La Jita Corp., San Antonio	35,154.29	10,921.69
Leonard, George, Somerset	1,147.39	367.33
Lacy, Roger, Fee Lease, Kilgore	140,394.00	35,098.65
Lake Refining Co., Gladewater	70,612.00	9,332.63
Lawson, Eurgene B., Est., Tulsa, Okla.	11,925.67	5,173.50
Livingstone & Wellman, Eastland	520.00	161.20
Lewis, J. E., & Co., Eastland	512.33	211.34
Lefevre, V., Henrietta	339.60	137.34
Lefors Petroleum Co., Lefors	10,073.92	2,653.95
Livingston & Wellman, Fort Worth	125.00	31.25
Lewis, Stanley, Oklahoma City, Okla.	22,727.38	6,724.08
Letwin & Lippitt, Fort Worth	51,650.00	16,820.58
Lester & Duffield, Inc., Dallas	62,441.00	20,086.86
Lido Oil Co., Vernon	27,584.09	9,903.33
Lloyd Oil Corp., F. E. Wolfe, Recr., Fort Worth	3,414.51	1,495.95
Ledger Oil & Gas Co., Brownwood	957.65	444.22
Lewis Production Co., Pittsburgh, Pa.	51,190.00	15,896.37
Lechner & Hubbard, Dallas	45,313.16	12,794.73
Lion Oil Refining Co., El Dorado, Ark.	268,386.21	70,396.72
Lindsay, R. W., Drilling Co., Wichita Falls	77,759.34	32,215.12
Le-Cook Oil Co., Electra	180.79	88.61
Little Caesar Oil Co., Logview	5,075.02	1,473.91
Lebow, C. H., Tulsa, Okla.	1,106.70	431.34
Lee, Homer, Wichita Falls	6,646.24	2,825.35
Lee, T. W., Gladewater	6,451.57	1,889.84
Lee, T. W. & C. A., Gladewater	20,265.30	6,377.80
Lee & Hankamer, Gladewater	2,552.00	816.38
Lee & Phillips, Gladewater	18,795.41	6,313.60
Leidecker & Cayton, Dallas	20,709.11	6,365.31
Leck Royalty & Oil Co., Fort Worth	45.00	12.50
Leoard Petroleum Co., et al, Washington, Pa.	40,902.42	13,128.92
Lesh, John L. & Co., Nocona	3,852.89	1,025.18
Lesh, Kilcrease & Co., Nocona	555.12	146.58
Lesh & McCall, Nocona	38,373.95	11,091.30
Lipscomb, R. C., Longview	10,565.94	3,184.60
Little, Wm., Pecos	4,523.12	1,151.81
Lide-Rowe Oil Co., Inc., Shreveport, La.	55,586.99	14,332.27
Lockhart, H. L., Dallas	5,839.96	1,902.39
Lucey Petroleum Co., Dallas	176,853.95	60,926.18
Long, Joe, Drilling Co., Cushing, Okla.	3,936.23	1,506.55
Longhorn Oil Co., Tr., San Antonio	4,535.95	1,676.97
Loma Oil Co., San Antonio	23,608.40	9,461.38
Long, C. B., Wichita Falls	337.73	159.67
Long Oil Co., Henderson	7,621.00	2,763.00
Lowenstein Oil Co., Rockdale	586.94	151.31
Lowe Oil Co. & Cranfill-Reynolds, W. B. Swearingen, Rcvr., Luling	2,738.40	840.46
Loggie & Arendt Oil Co., Albany	893.98	318.37
Londo Oil Co., Inc., Tyler	18,126.37	5,116.67
Long, Roy, Oil Co., Navasota	647.66	278.49
Los Olmos Oil & Gas Co., Harlingen	36,060.98	12,817.33
Lucey, J. F., Rcvr, A. & P. Lease, Dallas	5,631.30	1,862.75
Lytle, C. F., Mexia	6,489.17	2,217.45
Lone Star Gas Co., Dallas	24,291.41	9,222.03
Lone Star Gasoline Co., Dallas	4,794.00	1,650.33
Louisiana Oil & Refining Corp., Shreveport, La.	127,823.72	35,001.05
Luna Oil Co., Longview	4,614.18	3,686.32
Lone Star Oil Co., Ardmore, Okla.	5,800.29	1,730.19
Long, L. A., Graham	20,305.76	6,520.37
Luling Oil & Gas Co., San Antonio	68,691.56	25,701.14
Lowe & Delaney, DeLeon	2,857.67	937.70
Lone Pine Oil Co., Toronto, Ont.	16,384.14	5,006.42
Lone Pine Oil Co., Toronto, Ont.	17,037.43	4,450.42

M

MacDermott, W. F., Fort Worth	498.67	169.55
Mack Oil Co., O. K. Bowles, Rcvr., Pearland	1,720.99	722.71
Malernee-Bullock Oil Co., Oklahoma City, Okla.	6,047.50	1,776.77
Maddox Development Co., Pittsburg	1,740.00	522.00
Mahaney, C. L., Oil Co., Dallas	3,503.11	997.46
Mahaney-Hill Petroleum Corp., Dallas	3,305.35	979.52
Manahan Oil Co., Tulsa, Okla.	67,171.61	19,529.78
Madden, E. B., Olney	7,384.90	3,673.83
Madden & Hunt, Olney	4,631.47	2,096.70
Macknold Co., San Antonio	96.00	25.78
Macmillan, Alfred, & Jim McMurrey, El Dorado, Ark.	47,499.43	9,761.01
Madison Oil & Gas Co., Electra	2,492.74	1,033.57
Mann, Floyd, Graham	200.00	87.87
Mann & Forbes, Graham	2,230.00	826.48
M. B. G. Oil Co., Dallas	277,780.63	57,023.97
Magruder, G. B., Fort Worth	4,442.85	1,178.41
Mabee Consolidated Corp., Tulsa, Okla.	122,085.20	58,590.84
Malta Oil Co., Houston	21,301.68	7,686.83
Magnolia Petroleum Co., Dallas	4,264,513.82	1,264,275.86
Mayberry, C. R., Co., Laredo	1,186.51	434.44
Marner Oil & Gas Co., Tulsa, Okla.	3,542.77	1,269.68
Massey, J. V., Grandfalls	1,221.00	366.30
Manson Oil Co., Chickasha, Okla.	41,614.14	13,316.52
Martin, F. W., & Co., Tulsa, Okla.	9,929.46	2,657.93
Marfinwood Oil Co., Corsicana	4,716.00	1,488.40
Massie, J. H., et al, Orr Lease, Electra	47,125.72	14,674.64
Massie, J. H., et al, Finn Lease, Electra	46,697.48	13,378.93
Massie, W. M., Rcvr., W. N. Hooper, et al, Fort Worth	71,967.47	32,634.49
Marine Corp., Dallas	34,356.86	8,163.26
Marta, E. R., Dallas	1,689.98	566.69
Maxson, W. E., Jr., et al, Wichita Falls	13,883.15	5,029.42
Marshall, Geo. J., Laredo	147.50	51.62
Maynard & E. S. Taxman, Wichita Falls	1,506.55	682.30
Massie, J. R., Wichita Falls	91,076.53	29,991.50
Maxwell, A. C., Fort Worth	17,751.78	4,480.83
Marr Drilling Co., T. E. Marr, Tyler	8,289.51	2,648.96
Manziel, Bob'y, Moore Well, Gladewater	6,294.69	1,693.99
Manziel, Bobby, Gladewater	5,624.81	1,521.95
Manziel, Bobby, Gladewater	2,635.91	707.41
Manziel, Bobby, Gladewater	13,234.19	4,053.50
Manziel, Bobby, Gladewater	3,326.74	923.91
Martin, C. A., Eastland	9,340.72	1,716.11
Martin & Hamilton, Wichita Falls	2,951.43	1,036.65
Mays, R., Fort Worth	406.78	154.45
Margay Oil Corp., Tulsa, Okla.	77,221.84	19,998.11
Marlin Oil Synd., Auburn, N. Y.	1,651.38	297.29
Mar La Fay Oil Co., Gladewater	9,247.44	2,812.94
Matthews, W. H., Longview	39,464.60	7,646.29
Maurich Oil Co., Tyler	47,109.92	8,906.26
Mazda Oil Corp., Tulsa, Okla.	.....	.....
McCarty Oil Co., Wichita Falls	34,546.40	14,046.00
McBride, L. C., Dallas	4,349.17	1,288.72
McDaniel, D. B., Houston	80,505.76	30,198.93
McAlbert Oil Co., Inc., Houston	43,912.51	18,910.86
McCamey, Geo. B., Fort Worth	5,440.78	1,562.80
McCartney, J. A., Tyler	2,601.28	860.44
McDonald & Smith, Tyler	2,590.28	756.90
McChesney, Nancy, Olney	1,445.14	665.84
McConnell, Will H., Tr., Tyler	4,961.31	1,558.92
McCarter, R. C., Rising Star	1,161.70	510.35
McCrary, E. W., Tulsa, Okla.	3,042.23	1,050.12
McGinley Corp., The, Fort Worth	2,467.44	869.81
McClanahan, D. E., Vernon	82.18	36.34
McGowan Oil Co., San Antonio	9,221.45	3,245.39
McCormick, C. E., Tr., Gladewater	5,590.00	1,344.50
McCutchen, C. E., Tr., Wichita Falls	3,551.93	1,438.76
McClanahan & Venable Oil Co., Tyler	98,159.15	29,566.62
McClinton, J. G., Amarillo	4,495.00	1,088.74
McCutchin, Alex, Arp	40,364.88	15,562.09
McCormick & Noack, Rockdale	310.35	133.45
McDaniel Oil Corp., Cisco	2,102.42	811.94
McGee, H. W., Dallas	21,529.13	4,972.06
McLaughlin, Mrs. Belle, Caddo	313.00	102.96
McBride, W. C., Inc., St. Louis, Mo.	4,335.19	1,406.41
McVey & Aldahl, Kilgore	4,388.00	1,417.00
McIlroy Oil Co., Amarillo	15,567.96	4,309.36
McMurrey & Fair, Tyler	19,089.56	5,241.53
McMillan, L. O., B. F. Carroll, Tyler	8,575.92	2,425.36
McNallen & Griffin, Tulsa, Okla.	5,575.35	1,606.39
McMurrey, Jim, Tyler	70,147.37	13,813.94
McKanna, Inc., Wichita Falls	3,156.32	1,364.96
McMurray, Root & Rhodes, Eastland	1,141.00	427.00
McLester Oil Co., Eastland	5,927.98	2,321.60
McNan Oil Co., (Fmy. C. R. Starnes, et al), Gladewater	6,344.00	1,869.00
McKinney, W. E., et al, Tyler	13,344.48	4,368.57
McMahon, C. L., Tulsa, Okla.	124,072.48	34,222.23
McNally, F. B., Corsicana	5,544.01	1,684.18
McRoberts, J. J., Houston	11,145.56	3,356.87
McMurray, J. L., et al, Cisco	1,405.68	608.41
McJunkin, Florence F., Tulsa, Okla.	203.70	92.02
McWhorter, E. O., Rcvr., Longview	8,739.00	1,572.16
McNamara Oil Co., Beaumont	.....	.....
Mecom Oil Co., Liberty	5,457.00	4,229.32
Merrick, John F., Wichita Falls	9,050.32	2,603.56
Merrick & Belcher, Wichita Falls	6,479.08	2,563.11
Merrick & Goldsmith, Wichita Falls	1,944.35	831.64
Mendenhall Oil Co., Cisco	742.86	282.88
Mead Oil Co., Tulsa, Okla.	17,069.48	4,939.64
Mennis, G. W., Est., First National Bank, Wichita Falls	1,269.11	420.31
Merry Bros. & Perini, Inc., San Angelo	14,414.80	4,352.49
Meredith, J. D., Moran	1,902.64	675.55
Means, E. W., Borger	4,620.00	1,201.20
Menke, John G., Wichita Falls	569.98	209.80
Meredith & Gant, Wichita Falls	1,111.82	361.06
Meridian Petroleum Corp. of Texas, Tulsa, Okla.	36,549.51	11,730.92
Merrick, F. W., Inc., Ardmore, Okla.	74,850.52	19,957.75
Merren, K. E., Shreveport, La.	30,222.27	6,184.73
Merren, K. E., Tr., Shreveport, La.	45,007.57	9,566.16
Means, J. C., Jr., Houston	12,761.99	4,019.13
Mercury Petroleum Corp., Houston	4,333.49	1,209.04
Mills & Garrity, Corsicana	2,198.20	879.28
Mitcham, G. P., Dallas	32,305.45	9,880.09
Mid-Tex Production Co., Breckenridge	13,899.28	4,959.21
Miller-Lacy Oil Co., Longview	3,973.07	1,112.46
Mid-Continent Petroleum Corp., Tulsa, Okla.	19,996.35	6,383.20
Minnich, Tommie, Archer City	120.00	60.00
Mitchell, Frank A., Wichita Falls	2,795.32	1,230.63
Miller, Paul L., Kilgore	32,743.35	7,156.98
Mil-Hil Corp., Dallas	11,369.52	1,398.73
Minnesota-East Texas Oil Co., St. Louis, Mo.	6,773.00	1,945.26
Midland Oil Co., San Antonio	50,400.22	19,612.30
Minnetex Oil Corp., Wichita Falls	618.94	239.88
Midway Petroleum Corp., Shreveport, La.	1,598.10	444.46
Midas Oil Co., Dallas	53,602.54	15,715.19
Mills Bennett Production Co., Houston	604,067.35	247,001.37
Miller, John C., Tr., Mineral Wells	494.00	85.00
Mims, Ed, Int. Reynosa Oil Co., Wichita Falls	38,688.45	11,963.23
Mid-Kansas Oil & Gas Co., Findlay, Ohio	3,829,986.68	997,889.09
Modern Refg. Co., Gladewater	13,910.00	3,573.35
Moody Corp., Tulsa, Okla.	191,043.62	53,042.73
Moore, Adrian, Houston	23,209.82	11,825.41
Montgomery-Rea-Montgomery, Sedwick	744.14	275.33
Mordyan Petroleum Co., Pampa	12,977.02	4,138.02
Monte Oil Co., Dallas	157,383.00	39,284.02
Moore, R. A., Rcvr., Rex Petroleum Corp., Inc., Orange	4,345.68	1,527.45
Monte Oil Co., Richardson-Callahan Synd., Dallas	40,818.64	10,409.39
Moran, E. J., Dallas	44,919.49	10,939.52
Morgan, Ray, et al, Fort Worth	638.81	240.44
Mortex Oil Corp., Houston	101,405.17	38,848.70
Moca Oil Co., San Antonio	2,599.10	814.81
Moore, B. W., Inc., Kilgore	4,601.70	1,459.69
Moutray Oil Co., Abilene	1,224.96	292.53
Mohawk Oil Co., Tulsa, Okla.	10,581.50	2,606.76
Monroe, R. S., Tyler	6,909.58	2,198.67
Monette Oil Co., Chr. "B" Lease, Tyler	2,090.41	1,330.10
Moses, E. L., Luling	94.87	54.36
Moss, H. S., Spl. Tenery Lease, Dallas	15,683.91	5,044.42
Monette Oil Co., Brightwell "B" Lease, Tyler	5,312.49	1,778.12
Monette Oil Co., Brightwell "A" Lease, Tyler	3,959.50	1,351.76
Monette Oil Co., Christian "A" Lease, Tyler	3,590.84	1,326.20
Mook-Texas Oil Co., Fort Worth	4,390.64	1,569.41
Morgan, Cecil A., Fort Worth	4,272.88	1,951.53
Moss, H. S., Dallas	21,387.27	6,505.13
Moss & Urschel, Dallas	17,456.78	6,047.83
Moss, Urschel & Keys, Dallas	3,8 5.25	1,.18.41
Moore, E. E., Tulsa, Okla.	36,791.74	11,190.31
Mount & Lee, Inc., Wichita Falls	1,075.96	462.62
Moran, J. J., et al, Wichita Falls	2,518.09	989.26
Modern Refining Co., Gladewater	13,910.00	3,573.35
Moody-Seagraves Producing Co., Houston	146,850.55	61,669.91
Murphy-Rodgers & Lanier, Marshall	1,895.00	573.67
Murchison Oil Co., Dallas	20,204.52	5,497.23
Murchison & Cranfill, Wichita Falls	636.00	328.21
Murphy, O. G., Tr., El Dorado, Ark.	42,829.66	11,712.70
Mullendore, Berry & Berry, Cleveland, Okla.	80,182.98	24,423.27
Murphy, C. H., & J. T. Roberts, Production Co., Longview	15,359.00	3,428.75
Murphy, J. F., Tr., Sapulpa, Okla.	2,692.22	764.61
Murphy, J. F., Tr., Sapulpa, Okla.	5,858.77	1,847.08
Mudge Oil Co. of Texas, Pittsburgh, Pa.	80,483.44	23,760.15
Mues & MacDermott, Fort Worth	254.15	116.91

N

New York Southern Petroleum Corp., Dallas	9,832.92	3,251.37
New York Southern Petro. Corp., Dallas (7-1-32 to Feb., 1933)	8,629.19	4,665.47
Nabob Oil & Gas Co., Amarillo	10,144.76	3,218.55
New State Oil Corp., Fort Worth	3,419.29	877.72
Nash, Windfohr & Perry, Austin	36,481.21	7,891.18
New Process Production Co., Dallas	24,609.00	6,868.59
Newblock-Holmes, Amarillo	5,993.45	1,905.69
National Securities Oil Co., J. F. Lucey, Rcvr., Dallas	9,787.13	2,549.31
National Oil Co. of Texas, San Antonio (Quar end. June 30, 32)	4,204.13	4,120.05
Newton & Lillie, Goose Creek	15,863.42	5,794.87
National Oil Co., San Antonio	467.11	128.09
Navarro Oil Co., Houston	327,213.09	108,199.67
Newport & Ohio Petroleum Co., Newport, N. Y.	394.57	178.99
Nemo Oil Co., Athens	65,478.69	19,686.03
Nathan, Albert, Tulsa, Okla.	290.00	146.98
Nash & Windfohr Oil Corp., Graham	43,704.47	15,912.06
Neversuch Oil Co., Mexia	55,632.72	23,434.49
Number Nine Oil Corp., Tulsa, Okla.	2,376.80	909.88
Newman, C. H., Lawton, Okla.	8,063.39	1,871.29
Newton-Palmer Oil Co., Rockdale	144.86	62.28
National Oil & Grease Co., Dallas	47,963.77	13,480.05
Nicholson-Terrell Oil Corp., Longview	4,175.41	1,169.11
Northern Oil Co., Amarillo	3,284.09	864.65
Niles, Alva J., et al, Succrs. Trevino Oil Corp., Laredo	18,970.99	5,353.40
Noble & Co., Tulsa, Okla.	14,389.95	3,578.31
North Fork Oil Co., Amarillo	3,794.93	1, 72.06
Nash & Strickland, Henderson	14,360.71	3,695.80
Nutt & Gates, Wichita Falls	2,943.05	1,119.59
Noack Oil Co., Rockdale	526.61	226.44
Noack & Lanning, Rockdale	809.74	302.23
Nivla Oil Corp., Tyler	633.00	241.50

	Barrels	Value
O		
Orange Petroleum Corp., Orangefield	19,074.42	6,571.89
Olean Petroleum Co., Bristow, Okla.	11,414.92	3,264.08
Olney Oil & Refining Co., Wichita Falls	96.89	40.68
Oakes, Roscoe F., & E. E. Combs, Assoc., San Francisco, Calif.	24,231.30	6,653.40
Oil Properties Corp., Houston	2,519.60	831.27
Omohundro, W. B., Wichita Falls	1,433.07	493.09
Overton Refining Co., Inc., Overton	148,570.24	29,955.88
Ogden & Reed, Austin	17,147.03	5,948.32
Operators Royalty & Producing Co., Tulsa, Okla.	18,711.97	6,484.53
Owen, John, Tr., Tyler	12,120.11	3,817.76
O'Brien, W., Amarillo	499.47	158.68
Omega Oil Co., Longview	9,472.83	3,220.96
Ochiltree, Jeffries & Harding, Inc., Pampa	447.29	134.13
O'Hern, John J., Laredo	28,774.12	8,361.57
Owenwood Pool No. 3, J. W. Robins, Tr., Fort Worth	30,820.87	8,781.92
Olvey, J. W., & Clark Sample, El Dorado, Ark.	83,868.11	20,927.39
Oriental Oil Co., Dallas	35,132.65	8,479.75
Owens, Sherwood B., Brownwood	1,686.35	709.43
O. W. R. Oil Co., Inc., Dallas	36,674.39	11,237.11
O'Neil, John, Wichita Falls	9,228.30	3,681.10
Owen-Sloan Oil Co., Tulsa, Okla.	21,972.93	5,547.21
Oil Production, Inc., Shreveport, La.	1,554.02	777.01
P		
Pearson, L. R., et al, Ranger	2,639.74	1,029.19
Pelican Natural Gas Co., Inc., Shreveport, La.	68,430.16	18,846.19
Pemeta Oil Co., Fort Worth	2,129.03	978.09
Peyton Bros., Mexia	21,293.13	6,401.11
Peter, H. W., Wichita Falls	167.21	80.28
Patrick Production Co., Dallas	12,221.00	4,487.02
Petroleum Finance Corp. of Texas, Dallas	62,709.38	19,162.91
Parks, R. C., Dallas	1,905.38	550.65
Palmer & Burch, Inc., Wichita Falls	4,869.86	2,049.01
Phillips, B. I. F., Gladewater	32,837.40	10,376.29
Petroleum Pipe Line & Storage Co., Tyler	5,937.89	1,810.72
Petroleum Pipe Line & Storage Co., Tyler	5,486.78	1,672.16
Peery, Thomas H., Wichita Falls	10,402.05	3,763.03
Petroleum Producers Co., Wichita Falls	56,258.61	23,080.67
Phillips & Bennett, Mexia	2,722.63	748.89
Panhandle & Santa Fe Ry. Co., Wichita, Kans.	4,508.00	1,086.88
Pansota Oil Co., Amarillo	2,571.40	710.72
Papadakis, James, Houston	46,422.86	12,636.99
Peden-Olson Oil Co., Houston	1,423.56	390.60
Panhandle Refining Co., Wichita Falls	72,863.00	26,675.75
Pearce & Moore, Kilgore	4,864.89	1,124.19
Pearce & Moore, Kilgore	4,592.88	1,265.80
Phillips Petroleum Co., Bartlesville, Okla.	88,755.35	34,440.84
Phillips Petroleum Co., Bartlesville, Okla.	23,951.95	5,671.76
Phillips Petroleum Co., Bartlesville, Okla.	2,380.76	825.55
Phillips Petroleum Co., Bartlesville, Okla.	9,420.55	2,658.09
Phillips Petroleum Co., Bartlesville, Okla.	10,118.81	2,647.98
Phillips Petroleum Co., Bartlesville, Okla.	76,850.08	19,260.24
Phillips Petroleum Co., Bartlesville, Okla.	28,328.43	14,569.16
Phillips Petroleum Co., Bartlesville, Okla.	5,412.04	2,210.51
Phillips Petroleum Co., Bartlesville, Okla.	640.63	271.25
Phillips Petroleum Co., Bartlesville, Okla.	4,039.03	1,734.62
Phillips Petroleum Co., Bartlesville, Okla.	5,454.19	2,164.89
Phillips Petroleum Co., Bartlesville, Okla.	10,441.39	4,021.83
Phillips Petroleum Co., Bartlesville, Okla.	5,085.77	2,220.89
Phillips Petroleum Co., Bartlesville, Okla.	647.89	195.83
Phillips Petroleum Co., Bartlesville, Okla.	852.07	381.15
Phillips Petroleum Co., Bartlesville, Okla.	2,335.56	1,122.20
Phillips Petroleum Co., Bartlesville, Okla.	166,001.69	46,548.42
Phillips Petroleum Co., Bartlesville, Okla.	617.37	138.54
Phillips Petroleum Co., Bartlesville, Okla.	1,555.35	462.88
Phillips Petroleum Co., Bartlesville, Okla.	330,320.67	69,378.86
Phillips Petroleum Co., Bartlesville, Okla.	17,513.51	7,277.24
Palmer, Freddie, Oil Co., Rockdale	153.16	65.56
Pelphrey Bros. & Hobson, A. E. Waghalter, Rcvr., Gilmer	4,548.51	1,362.73
Perkins & Snider Lease, Wichita Falls	903.31	341.57
Pearce, W. B., Kilgore	3,721.98	1,201.35
Pennowa Oil & Gas Co., Skiatook, Okla.	5,627.82	1,448.46
Pace & Ward, Breckenridge	3,463.63	1,263.62
Perkins-Cullum Oil Co., Wichita Falls	49,750.69	18,742.96
Palo Pinto Oil & Gas Corp., Strawn	1,476.27	982.26
Philmack Oil Co., Tyler	5,815.34	1,637.68
Philp Bros., Beaumont	3,030.77	1,053.49
Perrin & Fehl, Dallas	24,539.98	7,640.30
Paraffine Oil Co., The, Houston	9,866.19	3,279.92
Pettit, Chas., Tr., Dallas	19,803.96	6,357.21
Pace Petroleum Corp., Chas. E. Allen, Tr., Oklahoma City, Okla.	13,135.66	4,752.54
Permian Oil Co. & Gibson & Johnson, Inc., Eastland-Ft. Worth	1,259.07	548.02
Pace, Geo. L., Dallas	15,892.80	5,373.20
Penn Oil Co., Dallas	25,458.84	6,566.70
Palm, F. N., Est., J. L. Douglas, Tr., Moran	300.87	102.30
Petroleum Marketing Corp., Houston	90,532.68	20,890.40
Pearson Oil Co., San Antonio	28.00	14.00
Pearson, W. L. Properties, Inc., Houston	52,696.45	22,234.19
Peachtree Oil Co., Tyler (Bagdad, Fla.)	.....	.....
Professional Oil Co., Waco	26,799.48	8,153.40
Piney Oil & Gas Co., New York, N. Y.	2,120.20	485.04
Professional Oil Co., Waco	64,819.56	11,916.30
Proctor, George, Wichita Falls	8,609.28	3,434.76
Portland Drilling Corp., Wichita Falls	390.13	152.16
Prine, J. C., et al, Jackson, Miss.	3,668.00	917.00
Pyramid Petroleum Co., Dallas	9,970.15	3,262.20
Prince Bros. Drilling Co., Inc., Electra	5,922.28	1,442.25
Plymouth Oil Co., Pittsburgh, Pa.	37,328.24	8,329.36
Pinkston, E. L., & F. M. Hood, Tyler	5,358.67	1,692.59
Pointer Oil Co., Inc., Waco	47,952.00	8,919.06
Pitzer & West, Breckenridge	42,150.99	19,199.62
Putnam Oil Co., Houston	15,762.45	6,244.48
Porter, C. G., San Antonio	2,742.29	1,000.22
Pivoto, M. E., Sour Lake	3,698.84	1,323.96
Plains Production Co., Dallas	2,730.00	819.00
Plummer, Albert, Houston	11,561.64	3,282.36
Plummer & McDaniel, Houston	4,695.90	1,619.36
Pois, M., et al, Wichita Falls	4,036.93	1,710.96
Pratt, D. C., Mineral Wells	690.50	315.49
Pioneer Oil, Gas & Refining Co., Danville, Ill.	681.99	203.28
Garrison, L. R., Rcvr., Pittman Oil Corp., Fort Worth	39,640.53	10,751.44
Powell, J. L., Est., Wichita Falls	159.53	76.56
Prine, J. C., Mobile, Ala.	4,181.50	1,045.37
Prine, J. C., et al, Overton	2,171.50	642.87
Porter, R. W., Dallas	225,355.00	36,919.23
Piper, L. E., Tr., Vernon	1,222.04	457.28
Pursel, Carl, Tulsa, Okla.	10,383.67	3,982.84
Pursel, Carl, Tulsa, Okla.	8,831.56	3,467.15
Pugh-Hickman Drilling Co., Inc., Shreveport, La.	50,759.54	14,197.36
Porterfield, R. R., Midland	1,558.23	614.62
Powers Production Co., Houston	32,174.16	9,382.20
Producers Supply & Tool Co., Marietta, Ohio	2,273.20	921.42
Producers Supply & Tool Co., Marietta, Ohio	9,788.54	3,884.10
Postelle, J. F., et al, Fort Worth	2,162.08	625.59
Producers Drilling Co., Wichita Falls	1,030.66	382.05
Pine Petroleum Co., Henderson	273,670.82	69,644.60
Prichard, L. H., Oklahoma City, Okla.	3,366.09	1,027.84
Pratt, Thomas H., Brenham	330.00	222.25
Prince Bros. Drilling Co., Electra	18,980.11	6,078.57
Putnam, Roger, Sandia	3,413.03	747.70
Pitkin-Goidston Oil Co., Houston	28,474.81	10,636.49
Pollard, W. E. and C. E., Pampa	2,934.01	883.89
Pine Grove Oil Co., Tyler	14,446.50	4,430.73
Pine Lodge Oil Co., Inc., Houston	2,655.35	753.24
Pure Oil Co., Chicago, Ill.	768,838.75	252,544.56
Pure Oil Co., Chicago, Ill.	3,696,796.91	1,233,966.15
Pure Oil Co., Chicago, Ill.	18,977.57	6,347.34
Pyle, T. J., Wichita Falls	552.83	275.54
Priest, L. G., Drilling Co., Fort Worth	9,138.67	1,965.38
Putnam Supply Co., Albany	1,108.47	466.53
Q		
Quincy Oil Co., Vernon	127.11	63.55
Queen Oil Co., Wichita Falls	201.24	67.89
R		
Rancho Oil Co., Fort Worth	251,789.98	68,251.10
Ray, W. R., Drilling Co., Inc., Shreveport, La.	1,439.74	602.19
Ramming, Staley & Ramming, Wichita Falls	266.58	94.57
Ramming, R. W., Wichita Falls	76.78	33.46
Ramsel W. T., Oil Co., Rockdale	1,046.12	449.83
Randall, W. S., Tyler	9,170.85	3,190.97
Randall, W. S., Oil Corp. of Texas, Tyler	2,639.11	640.62
Ranell Oil Co., Oklahoma City, Okla.	2,559.57	931.02
Rajo Oil Corp., Fort Worth	40,457.64	10,951.12
Raisen Bros. Oil Co., Chickasha, Okla.	9,135.96	2,182.73
Rathke Oil Co., Wichita Falls	12,133.13	4,919.18
Ray, George B., Tyler	86,358.84	26,384.32
Rearson, V. J., Tyler	11,455.00	3,303.40
Reserve Petroleum Co. of Texas, Tulsa, Okla.	68,441.56	20,380.33
Retsal Drilling Co., Inc., Henderson	7,934.48	2,609.58
Regent Oil Co., Dallas	22,304.90	6,946.15
Reclamation Co., Fort Worth	3,351.74	1,214.39
Reed, D. C., Austin	5,819.59	2,030.55
Reward Oil Co., San Antonio	5,078.12	2,388.01
Red River Oil Co., Tulsa, Okla.	19,204.84	7,307.64
Republic Supply Co., Houston	11,512.38	4,325.05
Rector & Davidson, Corsicana	8,244.40	2,539.72
Reinhart, M. J., trustee, Oklahoma City, Okla.	242.70	92.92
Reed, W. M., Breckenridge	488.81	183.69
Reynolds, W. F., Oil Co., Charles Triger, Receiver, Henson leases, Tyler	2,014.18	818.16
Regan, J. T., Rising Star	206.74	88.56
Refugio Oil Corp., Houston	22,767.97	6,563.84
Reed, Crenshaw & Glass, Nowata, Okla.	5,508.16	2,109.72
Read, D. B., Henderson	40,653.67	6,793.70
Read & Wrather, Henderson	22,745.57	4,734.84
Reeves, Riley & Reeves, Gouldbusk	81.00	81.00
Reynosa Oil Co., Wichita Falls	29,016.34	8,972.42
Repp Oil Co., Dallas	9,009.00	3,963.96
Rentex Oil Co., San Antonio	4,965.16	1,549.64
Red Star Oil Co., McAlester, Okla.	71,013.29	20,924.02
Reno Oil Co., Sistersville, W. Va.	33,097.44	13,045.16
Republic Production Co., Houston	301,121.31	98,564.02
Redick & Hugers Oil Co., Tyler	5,244.50	2,473.35
Reele, S., Receiver, E. & H. Oil Co., Dallas	17,250.31	4,536.83
Reynolds, Roy A., Fort Worth	5,613.21	1,695.41
Reynolds, Roy A., Fort Worth	31,106.45	16,407.50
Rhodes & Hughes, Breckenridge	13,976.56	5,568.32
Rhodes, W. J., Breckenridge	363.38	151.72
Rife, A. J., Dallas	5,970.85	2,155.57
Rieger, Cy, Amarillo	741.22	155.29
Rice Brothers, Shreveport, La.	5,654.65	1,546.68
Richards, C. W. and C. S. Bowman, San Antonio	6,723.19	2,168.26
Rexford, S. J., et al, Grandfalls	1,630.02	417.34
Rexford, S. J., Grandfalls	647.79	173.91
Rio Bravo Oil Co., Houston	252,302.74	100,547.14
Richmond Drilling Co., Texon	856.11	256.85
Richards, W. C., Athens	28,956.79	6,452.38
Riner, Roy L., Wichita Falls	11,674.37	3,344.73
Riner & Omohundro, Wichita Falls	5,729.43	2,374.28
Riggs, E. R., Graham	23,194.40	9,626.54
Rio Oil Corp., Fort Worth	25,342.41	8,892.26
Right-of-Way Oil Co., Fort Worth	570.24	206.76
Rockwell, J. A., & Co., Warren, Pa.	1,873.42	665.76
Rogers, Yandell, Tyler	4,484.15	2,104.54
Rogers, G. B., Receiver, Waco	49,372.54	12,898.49
Ratcliff, R. H., Receiver for P. M. Rowland, Colorado	1,730.09	478.86
Rowan & Nichols Oil Co., Fort Worth	21,823.38	8,966.44
Roeser & Pendleton, Inc., Fort Worth	293,562.34	95,133.19
E. R. Smith, Receiver, Root-Maben et al, Tyler	2,259.92	571.30
Rockdale Casing Co., Rockdale	1,675.94	720.66
Rose, Robert et al, W. B. Swearingen, Receiver, Luling	9,968.35	2,845.18
Rock Creek Oil Corp., Amarillo	2,787.01	569.44
Roscoe, A. E., Marshall	23,972.14	3,957.61
Robinson, J. B., Sour Lake	284.66	85.40
Roberts, Mrs. Dora, Big Spring	963.53	462.25
Rountree & Caudle, Rockdale	243.09	104.52
Robert Oil Corp., Breckenridge	42,618.37	14,594.85
Roiyat Production Co., Houston	1,200.00	456.79
Rowan & Hope, Inc., San Antonio	7,034.00	987.27
Roberts, J. B., Production Co., Longview	13,813.27	4,706.90
Rowe, Annie M., Wichita Falls	1,865.12	733.44
Roberts, H. W., Wichita Falls	5,644.23	2,451.18
Roberts-Roscoe, Henderson	6,114.18	1,752.28
Robertson, R. R., Wichita Falls	3,662.74	1,352.12
Romona Corp. and Dunning, Fort Worth	39,466.27	11,919.31
Root-Rhodes Oil Co., Eastland	6,916.00	2,417.00
Root-Rhodes, Gilman & McMurray, Eastland	2,895.00	1,141.00
Roberts, A. D., Henderson	2,327.53	814.21
Roberts, L. E., et al, Henderson	17,677.17	2,683.13
Roberts, L. E., et al, Henderson	20,859.47	3,076.87
Roberts, L. E., Henderson	62,787.67	9,770.19
Roberts, M. E., Henderson	1,785.59	178.55
Root, C. M., Eastland	4,567.00	1,819.00
Root & Fehl, Eastland	617.00	232.00
Rocky Mountain Oil Co., Tyler	9,536.86	2,895.36
Robinson, Arthur D., Dallas	15,229.35	4,243.71
Royal Petroleum Corp., Dallas	14,595.00	4,544.79
Rockwood Oil Co., McAlester, Okla.	4,684.52	1,769.87
Rogers, Dan D., Dallas	3,045.74	919.26
Robinson, O. D., Pittsburgh, Pa.	1,204.76	504.63
Rogers, B. H., Oklahoma City, Okla.	63,003.66	18,651.75
Roberts, D. C., J. F. Wright, trustee, Henderson	5,788.96	1,446.53
Roosth, Sam, Tyler	6,014.35	1,793.10
Rubin & Nadel, Tyler	10,615.27	2,893.63
Rubin & Wissman, Tyler	8,552.07	2,262.50
Ruston Drilling Co., Inc., Ruston, La.	31,606.65	9,286.71
Russ Petroleum Co., et al, Dallas	27,587.67	8,856.18
Ryan Consolidated Petroleum Corp., Tulsa	35,127.02	10,843.21
Rubenbourg, Fred, Spl., Graham	41.00	20.50
Rusk Crude Co. and Phoenix Crude Petroleum Co., Birmingham, Ala.	17,567.90	4,792.32
Ruthada Oil Co., Oklahoma City, Okla.	8,176.26	2,979.38
Rycade Oil Corp., Houston	5,200.04	2,050.30
Russell & Wilson, Wichita Falls	6,660.84	3,101.03
Rubsam & Hunter, Wichita Falls	3,859.51	1,450.64
Ruyle Farm & Oil Co., Wichita Falls	4,838.07	1,768.23
Rushing, J. S., El Dorado, Ark.	196,979.15	36,332.09
S		
Sarnosa Oil Corp., San Antonio	28,177.38	10,127.62
Sayre Oil Co., Glencoe, Ill.	81,764.17	17,602.27
Sanford Co., Inc., Tyler	7,965.00	2,132.97
Sandcreek Oil Co., Amarillo	930.00	232.50
Satellite Oil Co., Tulsa, Okla.	26,535.24	6,675.86
Sabine Synd. No. 1, Longview	21,197.49	5,813.93
Saco Corp., The, Fort Worth	69,284.48	17,492.45
Schott, Woods & Schott, Humble	2,189.65	789.68
Salmon Oil Co., Dallas	16,172.00	4,598.13
San Diego Oil Corp., San Antonio	64,854.16	20,342.94
Sakaba Oil Corp., Inc., Shreveport, La.	35,837.69	10,275.23
Savoy Oil Co., Tulsa, Okla.	10,588.90	2,461.36
Sandefer-Atkinson-Daniel Oil Corp., Breckenridge	713.50	327.02
Sawyer, W. G., Brownwood	583.05	202.17
Salado Oil Co., San Antonio	1,256.79	501.10
Sabinas Oil Corp., Longview	87,923.95	28,963.61
Saxet Oil Co., Houston	86,732.33	32,237.43
Scott & Nance, Graham	779.12	349.73

	Barrels	Value
Schmitt, A. H. and S. P., Fort Worth	3,821.34	1,543.18
Schlicher Oil Co., Beaumont	705.54	262.95
Schroeder, T. S., Dallas	22,271.05	6,201.02
Schermerhorn-Ardmore Co., Tulsa, Okla.	35,384.29	9,106.49
Scarborough & Reeder, Wichita Falls	1,190.12	553.17
Schermerhorn-Winton Co., Tulsa, Okla.	28,212.28	7,185.80
Scarborough, W. A., Wichita Falls	669.61	261.70
Schaffner, E. N., Cross Plains	411.66	115.90
Schaffner & Wilson, Cross Plains	896.42	359.74
Schultz & Weaver, Wichita Falls	9,132.94	3,647.78
Schoolfield, R. E., Wichita Falls	229.37	81.12
Schreeder, Paul, Iowa Park	598.71	207.95
Shoreline Oil Co., Inc., Marshall	7,620.67	2,157.72
Skelly Oil Co., Tulsa, Okla.	495,279.34	148,968.70
Showers & Moncrief, Inc., Houston	38,182.65	15,037.67
Shertzer Bros., Dewey, Okla.	3,860.13	484.09
Sherman Oil & Gas Co., Sherman	1,204.60	517.45
Sedwick Oil Co., Houston	2,796.46	1,116.82
Showalter-Russell & Trentman Oil Corp., Fort Worth	26,926.78	5,646.30
Security Nat'l. Bank, Mid-Continent Holding Corp., Wichita Falls	223.73	83.93
Security Nat'l. Bank, Wichita Falls	469.88	184.25
Shappell Oil Co., Wichita Falls	29,159.01	11,163.32
Shelburne, Sam P., Oklahoma City, Okla.	13,046.26	3,875.56
Shaffer, J. C. and Margaret, Coleman	4,344.52	1,360.51
Shiloh Oil Co., Dallas	6,191.09	1,740.00
I. P. Sessions, Rockdale	312.87	133.15
Selby Oil & Gas Co., Tulsa, Okla.	177,416.89	58,296.21
Shamrock Oil & Gas Co., Amarillo	91,407.28	22,501.97
Sec. 92, Production Acct., Pecos	2,656.78	689.20
Sherman Hunt, Tyler	5,419.29	1,515.82
Shertzer Bros., Dewey, Okla.	3,860.13	1,566.03
Sequoia Oil Co., Fort Worth	1,340.46	469.16
Shultz, Richard B., receiver, Dallas	17,047.94	4,696.97
Seaboard Oil & Gas Co. of Texas, Wichita Falls	15,065.81	5,848.29
Sentinel Oil Corp., Dallas	5,141.34	1,205.37
Senter, B. G., Jr., Dallas	167.50	104.28
Schlaiffke & Blair, Electra	5,719.14	2,308.94
Shano Oil Co., Longview	52,053.24	15,849.43
Shasta Oil Co., Longview	62,218.32	18,887.33
Sea Gull Oil Co., Tyler	2,448.81	520.05
Shipton, W. F., Mirando City	151.13	46.73
Sells Petroleum, Inc., Longview	58,922.21	19,006.11
Sinclair Prairie Oil Co., Tulsa, Okla.	3,352,639.99	999,693.70
Smith, E. R., receiver, Tyler (Lucas & Hobbs)	9,138.98	2,733.33
Smith, H. R., Inc., Luling	75,533.80	20,866.71
Simms Oil Co., Dallas	763,928.11	216,911.68
Smith & Touanne, Tyler	22,291.00	6,455.75
Smith, James T., Tyler	5,091.00	1,311.47
Smith, E. L., Oil Co., Inc., Mexia	151,853.17	44,278.93
Simmons, T. K., Tulsa, Okla.	1,858.61	727.75
Skia-Tex Petroleum Co., Amarillo	14,077.16	3,943.23
Smith, Mrs. James L., Amarillo	2,124.72	705.92
Smith, W. Claude, Houston	2,234.30	856.48
Sipe Springs Oil Co., Tulsa, Okla.	3,158.48	1,172.66
Smith & Strauss, Dallas	5,565.96	1,566.97
Sikes, Louis, Tyler	46,775.18	14,073.00
Slick, Thomas B., Estate, trustee, Oklahoma City, Okla.	34,476.01	17,561.01
Slicker, Homer, Cisco	559.20	216.46
Smith-Bohlsen Oil Co., Houston	7,460.24	2,242.02
Smith, Levi, Estate, Tulsa, Okla.	775.00	347.00
Smith, Levi, Estate, Tulsa, Okla.	2,419.25	983.59
Sirovich, A., and Mrs. F. M. Thomas, Houston	259.70	70.99
Skinner, E. W., Oil Co., Saratoga	2,096.78	657.68
Smith County Oil & Gas Co., Tyler	4,501.26	1,235.85
Smith, McIntosh & Thomas, Cameron	355.70	152.96
Smith, Rex D., Burkburnett	643.00	259.62
Smith, McIntosh & Thomas, Cameron	500.33	213.59
Simpson-Fell Oil Co., et al, Ardmore, Okla	5,912.14	2,008.36
Skipper-Bivins Oil Co., Inc., Longview	90,518.82	14,728.01
Skipper, B. A., Oil Co., Longview	7,577.30	2,798.97
Sklar, Sam, Shreveport, La.	4,703.56	1,485.12
Smith, R. B., et al, Houston	35,454.00	12,795.88
Smith, Guerin & King, Tyler	25,329.34	7,123.13
Smith, J. R., properties, Longview	21,388.28	5,551.69
Sink, Joel, Corsicana	199.00	81.00
S. & L. Oil Co., Dallas	26,517.58	6,538.52
Smith, C. F., Longview	17,547.09	4,862.90
Smith, L. D., Athens	83,417.58	18,502.16
Silver Star Oil Co., McAlester, Okla.	25,509.65	7,946.44
Smith & Ash, Wichita, Kans.	9,029.33	3,615.00
Slemp, C. Bascom, Washington, D. C.	894.70	326.16
Smith County Oil & Gas Co., Tyler	134,863.96	29,487.92
Smith County Oil & Gas Co., Tyler	26,808.26	8,910.85
Smith, James T., Tyler	6,704.35	1,846.87
Smith, James T., Tyler	9,243.06	2,499.41
Simmons, Jay, Dallas	9,852.81	2,657.00
Skipper, B. A., Prod. Co., Longview	35,591.02	15,587.71
Somon Oil Corp., and Anderson, Fort Worth	4,872.95	1,443.98
Spandeco Oil & Royalty Co., Dallas	61,452.03	18,262.86
Southern Drilling & Production Co., Bay City	33,007.56	11,028.61
Sneed Bros., Tulsa, Okla.	11,048.26	3,327.50
Supreme Oil Co., Orange	1,878.97	665.28
South Oil Co., The, Rosston, Ark.		
Somerset Oil Co. of San Antonio, Tex., Somerset	789.57	228.87
Somerset Crude Oil & Refining Co., Somerset	2,010.07	587.22
Southwest Royalty Co., Wichita Falls	2,065.65	847.21
South Texas Petroleum Co., Houston	48,962.95	23,015.27
Southwest Drilling Co., San Antonio	54,410.67	17,139.07
Speed, C. D., Corsicana	205.74	74.44
Southern Petroleum Exploration, Inc., Sistersville, W. Va.	27,106.43	8,613.79
South Texas Oil Co., Laredo	38,074.59	22,245.64
Sprague Oil Co., Ardmore, Okla.	5,069.09	1,346.64
Sondial Oil Corp., Overton	11,959.00	2,226.93
S. R. & C. Oil Corp., San Antonio	31,929.19	10,546.68
Southern Liberty Oil Co., Dallas	110,878.49	40,792.98
Southern Petroleum Corp., Houston	1,870.19	674.88
Spencer & Co., H. H., Burkburnett	46.74	11.68
Sonbar Corp., The, El Dorado, Ark.	16,320.31	4,566.85
Snowden & McSweeney Co., New York, N. Y.	130,858.09	41,756.55
Southport Petroleum Co. Tulsa, Okla.	9,574.06	3,209.94
Sturm-Nolen Drilling Co. Grandfalls	16,364.32	4,149.51
Strake Petroleum, Inc., Houston	31,996.19	15,419.80
Steinberger, Brown & Wheeler-Steinburger, Creighton & Word, Houston	88,354.52	37,057.85
Steed, Paul P., Dallas	267.05	75.52
Stock, H. I., Lubbock	645.80	251.97
Steen Drilling, Inc., Tyler	86,010.00	27,545.35
Storey-Friebele-Duffey Oil Co., Winston-Salem, N. C.	8,646.00	2,513.81
Storey-Friebele-Duffey Oil Co., Winston-Salem, N. C.	10,228.00	2,988.98
Stansylvania Oil & Gas Co., Amarillo	8,398.21	2,069.76
Stark, W. H., Orange	428.07	154.11
Stoops, J. P., Ranger	419.94	156.75
Stratton, Ed F., Pioneer	156.32	61.07
Stantex Petroleum Co. of Oklahoma, Oklahoma City, Okla.	8,173.00	2,286.05
Stella Oil Co., Beaumont	9,628.76	3,243.68
Stewart Holdings, Inc., Tyler	38,733.72	11,990.80
Staley, J. A., estate, Wichita Falls	1,606.82	661.94
Strelsky, Joe, and Hefley, Rockdale	174.06	73.96
Stidham & Thrasher, Tyler	5,129.80	1,899.41
Storey-Friebele-Duffey Oil Co., Winston-Salem, N. C.	1,179.00	353.81
Strickland & Mullins, Henderson	2,546.95	744.46
Stanolind Oil & Gas Co., Tulsa, Okla	2,847,174.53	742,553.44
St. John Oil Co., San Antonio	332.30	85.39
Stekoll, Harry, Amarillo	68,908.00	17,549.31
Stein, H., Overton	941.25	153.16
Strong, W. H., Fort Worth	4,479.28	1,183.18
Standard Pipe & Supply Co., Dallas	6,398.18	1,859.17
States Oil Corp., Eastland	26,026.30	8,916.79
Stoddard & Delaney, Dallas	19,117.95	6,539.86
Stodel Oil Co., Dallas	13,598.45	4,767.24
Stephens Oil Co., Sour Lake	498.40	155.52
Stoneman, T. S., Fort Worth	87,828.62	19,479.68
Stovall, E. C., & Son, Graham	5,693.21	2,711.71
Star Drilling Co., Wichita Falls	12,303.08	5,071.07
St. Marys Oil & Gas Co., St. Marys, W. Va.	22,473.14	8,227.76
Standard Oil Co. of Kansas, Houston	197,215.28	72,543.26
Stroube & Stroube, Corsicana	147,627.81	45,958.49
Summit Drilling Co., Tulsa, Okla.	38,628.00	12,068.94
Suits & Crotty, Ranger	1,572.25	558.52
S. & W. Oil Co., Amarillo	2,982.44	775.96
Suloch Oil Co., Amarillo	7,021.15	1,208.93
Superior Oil Co., Dallas	292,725.15	116,726.69
Swanner, John L., Wichita Falls	1,889.04	753.97
Sullivan, M. J., Kansas City, Mo.	407.00	147.22
Swearingen Oil Co., San Antonio	9,719.61	3,096.69
Sun Oil Co., Dallas	2,643,238.05	813,755.77
Sunray Oil Co. (C. H. Wright, receiver), Tulsa, Okla.	36,656.25	10,733.99
Sutton & Hawkins, Nivla Oil Corp., Tyler	4,146.01	1,360.21
Sutton & Hawkins, Nivla Oil Corp., Tyler	37,482.97	12,899.69
S. & W. Oil Corp., Dallas	27,340.40	4,319.68
T		
Texnia Oil Co., Wichita Falls	51,269.99	13,103.12
Tatum, Olive & Spradlin, Dallas	12,423.00	3,920.91
Tatum, Olive & Spradlin, Dallas	800.00	200.00
Texacal Oil & Gas Co., Los Angeles, Calif.	374.08	145.63
Thompson & Beene, Groesbeck	3,618.63	1,136.12
Texas Plains Oil Co., Wichita Falls	9,429.93	
Tex-Mex Petroleum Corp., Midland	5,871.87	1,127.10
Terrell, W. H., receiver, Longview	6,672.00	3,119.16
Taylor-Link Oil Co., Houston	27,716.37	7,220.26
Texilvania Oil Corp., Amarillo	232.00	58.92
Texon Oil & Land Co., Fort Worth	20,569.85	5,074.48
Tarpon Petroleum Co., Dallas	23,244.21	4,119.79
Thomson, Eddie, San Antonio	17,796.12	4,880.18
Taylor-Sibley Synd., Dallas	1,819.40	685.52
Texota Corp., El Dorado, Ark.	73,774.42	17,678.75
Thompson, Stanley A., Fort Worth	26,018.23	7,440.45
Thomas, Sam, trustee, Marshall	8,953.63	2,820.41
Thomas & Tarver, Inc., San Antonio	35,586.66	14,234.67
Teci Production Co., Sayre, Okla.	911.00	389.49
Thaxton, Nannie S., executrix, W. H. Thaxton estate, Austin	313.46	130.91
Thomason, D., Shreveport, La.	207.69	56.89
Thomason & Fitzsimmons, Shreveport, La.	3,857.05	1,229.48
Texas Petroleum Co., San Antonio	23,908.04	7,376.16
Texas Consolidated Oil Co., San Francisco, Calif.	6,903.93	2,470.56
Texas Gas Co., Houston	6,617.46	2,607.21
Thralls & Co., B. O., Breckenridge	584.90	246.40
Texas Fidelity Oil Corp., Louisville, Ky.	2,212.12	776.15
Tannehill, L. B., Albany	15,752.39	6,586.52
Taxman Refining Co., J. J., and M., Wichita Falls	2,693.04	824.14
Texas Gulf Producing Co., Houston	790,612.20	246,180.21
Tex-Jersey Oil Corp., Tyler	40,094.55	12,257.63
Thompson, R. E., Dallas	666.75	212.28
Thweatt, J. D., Wichita Falls	529.08	202.76
Taylor, John, receiver, Dallas	21,005.63	5,485.50
Taubman, H. P., Tulsa, Okla.	2,278.95	575.86
Tarver, A. H., Shreveport, La.	121,068.96	24,365.11
Texas Pacific Coal & Oil Co., Fort Worth	235,095.88	75,210.30
Texas State Oil Co., Dallas	16,872.62	5,878.08
Talbot, C. P., trustee, Shreveport, La.	2,669.00	799.25
Thompson, J. E., Humble	336.00	119.00
Texas Trading Co., Tyler	4,313.92	1,305.91
Texas Unity Oil Co., Houston	53,900.37	11,620.83
Terrell, Dora L., et al, Newcastle	135.05	50.65
Terrell, G. A., et al, Newcastle	396.68	162.52
Texas Central Oil Co., Eastland	726.00	297.54
Thagard, George F., Kilgore	14,826.32	2,291.93
Teatsorth, L., et al, Eastland	465.50	190.50
Texas Co., The, Houston	4,181,375.81	1,380,067.95
Tripplehorn, J. W. and D. R., Fort Worth	1,684.57	629.11
Tysco Oil Co., Dallas	28,870.71	7,674.36
Tide Water Oil Co., Tulsa, Okla.	2,976,785.81	644,451.19
Trio Oil Co. and C. F. Nichols, Seguin	7,177.15	3,778.15
Titan Oil Co., Longview	5,356.90	1,526.74
Trimount Petroleum Co., Shreveport, La.	3,485.28	1,299.77
Trans-State Oil Co., Houston	143,913.43	24,923.55
Turner, J. H., and L. O. Gandy, Iowa Park	4,255.29	1,219.17
Trans. M. R., Tulsa, Okla.	3,854.65	1,169.68
Tri Oil Co., Longview	1,500.00	500.00
Travelers Oil Co., Amarillo	2,992.37	975.14
Todd, Walter A., Cust. Estate of H. W. Elliott, Fort Worth	26,890.13	7,360.68
Triangle Petroleum Corp., Fort Worth	1,533.58	583.33
Towns, M. K., San Antonio	18,417.99	5,181.35
Towns, M. K., Luling	6,392.76	1,801.33
Tide Water Oil Co., Tulsa, Okla. (1-1-33 to 6-30-33)	256,768.58	134,517.97
Turman Oil Co., Tulsa, Okla.	179,069.49	54,962.84
Turman, L. C., W. E. Allen, receiver, Fort Worth	12,635.98	3,172.94
Tribal Oil Co., The, of Texas, Big Spring	59,033.05	14,891.70
Traylor-Rutherford Oil Corp., Refugio	10,267.13	4,027.27
Traylor Production Corp., Refugio	3,382.48	1,299.59
Travis & Wair, Gladewater, Loyce Phillips, receiver	5,783.54	1,708.83
Tucker, W. B., Dallas	15,584.23	3,847.09
Tucker Oil Co., Wichita Falls	72,577.27	26,171.39
Turner, W. F., Ardmore, Okla.	45,646.80	13,452.08
Turner, R. C., Loving	77.08	36.98
Timms Dietsch Oil Corp., Amarillo	5,122.33	1,363.96
Timms, E. T., Oil Corp., Amarillo	2,818.76	801.33
Timms, L. W., Oil Corp., Amarillo	2,470.06	662.77
Timms Robinson Oil Corp., Amarillo	1,622.83	421.67
Timms Fogarty Oil Corp., Amarillo	671.29	134.05
Timms Suthpen Oil Corp., Amarillo	771.92	146.56
Triangle Oil & Gas Co., Rockdale	449.45	193.26
Trinity Production Co., Wichita Falls	352.92	120.42
Twin Oil Co., Gladewater	36,351.35	5,611.53
Travis, M. M., Longview	75,687.49	14,049.04
Tyler Refining Co., Tyler	57,640.32	7,211.35
Trinity Refining Co., Gladewater	152,595.21	28,379.72
Trapp, M. E., Oklahoma City, Okla.	14,439.76	4,242.60
Trico Oil Co., Dallas	31,047.24	9,814.06
U		
United Production Corp., Houston	285,113.45	126,079.87
Union Oil & Mining Co., New Castle, Ind.	2,835.08	951.00
United North & South Development Co., San Antonio	173,079.32	62,717.61
Unique Oil Co., Inc., Hull	2,725.61	1,689.87
United Oil Corp., Wichita Falls	4,499.75	1,729.26
Urban, et al, Ranger	330.80	126.15
Upchurch & Co., Tyler	16,206.02	4,562.78
University Lease, Sec. 24, San Angelo	2,396.40	853.56
Upland Oil Co. and Cady-Conner & Crenshaw, Tulsa, Okla.	5,159.01	1,602.18
U-Tex Oil Co., Salt Lake City, Utah	13,640.26	3,592.54
United Crude Oil Corp., Amarillo	9,227.59	2,604.22
United Producers Co., Wichita Falls	19,256.05	7,771.34
Uscan Oil Co., Oklahoma City, Okla.	17,725.28	6,443.67
United East & West Oil Co., Gladewater	20,467.00	5,802.90
Underwood Drilling Co., Wichita Falls	1,062.99	392.35
Underwood Drilling Co., Wichita Falls	881.70	320.35
Underwood Drilling Co., Wichita Falls	1,444.58	537.02
Underwood Drilling Co., Wichita Falls	1,065.87	407.93
Underwood Drilling Co., Wichita Falls	1,185.85	419.23
Underwood Drilling Co., Wichita Falls	231.73	89.36
Union Oil Co. of Nevada, Los Angeles, Calif.	280.90	100.24
Unity Oil Co., Beaumont	10,202.00	3,512.70
Umsted, Mrs. Edna and Marvin, trustees, M. J. Munn Lease No. 5, Camden, Ark.	26,001.74	7,875.15
V		
Vassar & Carruth, Chilton	2,464.00	788.48
Vierson, Sam K., Okmulgee, Okla.	40,098.34	10,976.95
Van Wormer, P. E., Wichita Falls	2,356.61	1,056.17
Vireca Corp., Houston	4,479.43	1,339.32